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ARTHUR HOLLINS – FORDHALL FARM OUR ORGANIC FARMING SYSTEM

The Fordhall products - cheeses, yoghurts, salads, butter - were sold in shops as far apart as Edinburgh and Paris. They came from my farm near Market Drayton, Shropshire. As enthusiastic organic farmers we were among the first members of the Soil Association. And now the future has moved us to our present day farming of meat, poultry and eggs.

To explain the way Fordhall Farm is developing I must go back into a little of its history.

My Grandfather farmed the traditional mixed farming four course system on the 150 acres here at Fordhall, carrying 35 shorthorns, 45 spring lambing sheep and four breeding sows taking the progeny through to bacon weights.

The crop rotation was 25 acres of root crop, which included 10 acres of potatoes and crops for wintering the dairy cattle; 25 acres of corn, some being barley for malting; 25 acres of 2-year leys; the remainder was permanent pasture meadows along the River Tern. This system was common over large areas of England with minor variations. It seemed to be unchangeable, maintaining a good state of fertility with all the animal residues returned to the soil and the clover ley giving humus when ploughed in from its large root formation.

The First World War brought the farming community a

false prosperity with a large increase in the use of fertilisers to produce extra food at home. This happened at Fordhall, unbalancing the farm. Each field has sandy hills up to 1 in 12. A reduction in the animal population and the vast increase in fertilisers started a downward trend in soil fertility which my Father made no attempt to check because the fertilisers continued to produce a good yield. When the pendulum swung and hard times came in the twenties and early thirties, there were financial difficulties with fertiliser firms; then a gradual restriction in everything that aided soil fertility. In these sandy, sloping fields, which were bare during the winter, soil bacteria soon began to die away. The slopes became thinner and sandier and the best soil was washed to the bottom of the field.

All this broke Father's health and he died when I was only 14. Taking on a run down farm at this age, with its old established staff, seemed very enormous for me, especially as I had poor health; but the alternative was even worse. With Father gone, the idea of giving up Fordhall where Mother and I were born was unthinkable. It seemed impossible to get back to the sound practices of Grandfather's time without capital. Wages, averaging 35/- per week, were relatively high. Nevertheless I was convinced I could restore the old fertility. If I became my own stockman, and kept Jim, who worked for Father and Grandfather, as general farmworker, plus one wagoner, we could get back to better balanced farming. One of my

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biggest worries after Father's death was trying to pay fertiliser bills from poor crops. Old Jim assured me that Grandfather's crops on farmyard manure were much better than Father's fertilised cash crops. (I could write a book on the farming wisdom of Old Jim). However, let it be said that most of my farming experience was guided by him in those early days; his advice and patience with me when trying to achieve the artistic harmony of the past will never be forgotten. Slowly I realised, however, that clocks cannot be turned back - it only jacks up the works.

I gradually built up the herd by rearing everything (Shorthorns). Cutting down the fertilisers proved disastrous; the land had gone dead and lifeless.

Then came the Second World War, with all-night Home Guard duties. I was milking 39 head of cattle on my own. To meet the country's demand for maximum food production I tried all kinds of ideas. I read Albert Howard's books which led to a closer study of the soil and stimulated me into asking many searching questions. I also read a book, Forage Farming as Practised in Ireland, which tempted me into experimenting with some of its ideas at Fordhall.

A mixture of hardy greens, rye, rape and vetches were sown on a 5-acre patch in early July, after I'd dived in various manures, including poultry, and about 3 cwt. of

fish manure. A very good growth, about 2 ft. high, was achieved, the hardy greens dominating the crop. The autumn was a good grass season, but we had little hay and I decided to leave the crop for grazing in March, hoping for a mild winter. It turned out to be the opposite! The weather damaged the crop and the pigeons appeared to finish it off. However, spring came early and growth was rapid; the crop came away very well indeed and the pigeons appeared to have fertilised the field. The hardy greens reached 3 ft. very quickly, followed by the rye and some of the vetches. They fed 35 cattle from mid March to the end of April with almost the entire maintenance ration. The cattle yielded very well, but the milk was rather poor. I depended too much on this crop and made no attempt to balance it.

In April the weather was very warm; we turned the cattle out at night, controlling them with electric fences, and we gave them a small amount of hay in the field. This improved the butterfat. The corn crop from this field turned out the best in my farming career to date. I asked Jim why. His answer was very simple: "You put back more than you took away". He considered the pigeons had helped during the snow, as had keeping the cattle on the field day and night in April. He said, "Your Father was taking out and putting now't back; that stuff in them bags won't stay in the soil; it only drives out the valuable earthworms." "Well", I said, "it certainly proved a worthwhile experiment." I saved a large corn bill in March

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and April, the worst months of the year, and got a lot of milk and an excellent crop to follow. This indeed was food for thought and study.

A question that came to my mind was : What put the fertility here? Was it the plant, the animal, or the time of year? Logic would seem to argue it was none of these, as each would appear to have taken something out. It was noticeably easy soil to work after this crop. Was it the root growth? Was it the hard winter? The fact that the corn crop wasn't sown till mid May, yet yielded so heavily, removed the theory that corn is best sown in March, April. It leaves one to think that with fertile soil the crop could be sown any time within reason, provided the season given is long enough to arrive at the harvest.

Being young I was impatient to find these answers quickly; but in farming we all know this is not possible. One can only say, "Do it again and see if we arrive at the same result."

We planned to sow after an early potato crop, and keep a month by month record of what appeared to be happening. Here is that record.

We sowed annual red clover, rye and rape in July. This experimental crop with a good growing autumn got away to a very dense growth. In October, comparing this particular field with others on the farm, it was noticeable

that the surface of the ground was covered with white root hairs (Italian rye grass), although it was difficult to recognise which plant this came from; the plants were so interlocked together. Earthworm castings were rising out of the soil covering these roots. In the permanent damp conditions of autumn new growth was showing in the area at the bottom of the sward.

I was tempted to graze this crop in the autumn with sheep, but not wishing to spoil the experiment, I chose to graze only half, leaving the rest untouched as in the previous year. It produced excellent food for my sheep, but in my opinion at a time of year when the flock did not really need it. After grazing, the surface root hairs had vanished, but still remained in the ungrazed section. The ground was rather hard and waterlogged easily on the grazed section. The untouched half became soft with worm castings and showed no signs at all of waterlogging through the months of November and December.

As the winter was rather mild, the grazed section became very green again; the other half showed signs in January of rotting with a considerable waste on the bottom 4 inches. At the end of February the spring showed signs of making an early start and the grazed section started to grow. The ungrazed section showed signs of growth, but was now only standing 9 inches above ground level. Since most of the decayed portion had vanished, I

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supposed that the earth worm had covered it with its castings, mixing it into the top 4 inches of soil. When walking on that ground it had a soft, spongy tread. During a frosty spell it was possible to push an electric fence stake into the ground without any effort. On the grazed section it was impossible for the earthworm activity had practically ceased. This surely was nature's own way of making compost, which like the compost pile, generated its own heat.

In March we began grazing the ungrazed section which was beginning to make faster and bulkier growth than the grazed section as the land was drying out. By the end of March it was 14 inches high and producing very good feed for the cattle on day and night feeding controlled by electric fences. The autumn grazed section fed during April was also producing good grazing with only a slightly reduced yield. It would appear that I had gained by feeding off to sheep in autumn, over and above the one that was spring fed to cattle.

The whole field was ploughed, rotovated and sown again in mid May with barley which germinated and got away much healthier and quicker on the half left all winter and fed off to cattle. The crop proved approximately 7 cwt. to the acre better than the crop on the section that was autumn grazed.

I learn the need for winter cover

It was difficult to arrive at a conclusion, but it was additional proof that an untouched crop left through the winter increased fertility. Owing to my lack of scientific knowledge, I could not possibly see and explain what nature was doing in that top 4 inches of soil. It was so easy to arrive at a wrong conclusion and say, for instance, that the sheep did harm by grazing it in the autumn when wet and the cattle did no harm when conditions were better in spring. It took me another 5 years to reach my present conclusions. But the results started my farming method. Shifting my old system to accommodate it, we developed the following rotations:

1st year. 25 acres of root crops - 15 acres turnips and kale for late autumn cattle feed, grazed on the field. 10 acres early potatoes followed by rye, vetches and Italian rye grass for winter grazing. All 25 acres giving my soil the winter cover which appeared to be so necessary.

2nd year. 25 acres of grain, 10 acres of which was undersown for winter grazing, rape, with Italian rye-grass and red clover, 15 acres, undersown to 2 year ley, perennial rye-grass and wild white clovers (not a good mixture for this purpose).

3rd year. 15 acre ley used for silage or hay then rested for winter grazing. 10 acre new ley sown in July on

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rotovated field after rape crop, producing excellent early autumn pasture, but must be grazed very lightly, when it produces wonderful feed in March and April.

4th year. All leys grazed in the early half of the year and shut off in August for a mid-winter and spring grazing.

This rotation kept all my light soil covered during the winter and produced large quantities of winter feed.

Was winter cover and a dense root growth the reason why permanent pasture produced fertility? If so, what was happening in the soil in autumn and winter to do this?

Compulsory guidance from Agricultural Executive Committees during the war slowed down by progress, forcing me to do things against my better judgment.

After the war the development of forage farming practices progressed. In the mid fifties, the confidence we had gained by grazing cattle outdoors day and night in March and April each year led us to change the herd to Jerseys and graze half of them outdoors all winter. We planned to fill up the grazing gaps with the hardy green crops, feeding silage mid-February. The animals which spent the winter outdoors came forward to the new spring grass and yielded in March, April and May very much better than the animals indoors. Freshly calved cows gave no problems and yielded a good long lactation when calved

down in March. The cattle outdoors averaged 6% butterfat, those indoors only 5%. Following winter grazing all available manures were spread on the field and immediately rotovated in, producing a large weed growth which we left to grow to about 1 ft. high, rotovating again in late April. We repeated this again in May before sowing the barley or leys.

The following year we outwintered the whole herd; obviously the system is dependent upon ensuring that adequate grazing is available for November, December and January. It is easy to provide for 6 weeks at the end of January to the end of February, with silage from surplus summer grass. We make enough to see us through a hard winter.

The growth of our present organic farming system

From all this (which I have run over scantily, missing out many years of experiment) we have evolved our present farming system. The rotation that has gradually developed achieves a complete coverage of all the fields and provides adequate food for all the year round open air feeding for 80 head of cattle; it has slowly eliminated all corn growing, cash root crops and root crops for our cattle. Our rotation is achieved by carefully resting and rotating our field pastures to produce winter grazing on a 4 year cycle. The mixture used for these pastures which has proved most successful is:

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4 lb. Tetrone Ryegrass
6 lb. Perennial Ryegrass S.23
6 lb. Perennial Ryegrass S.24
3 lb. Cocksfoot S.26
3 lb. Cocksfoot S. 143
1 lb. Timothy S.51
1 lb. Meadow Fescue S.215
4 lb. Perennial Ryegrass Taptue
4 lb. Perennial Ryegrass Petra
2 lb. White Clover S. 100
2 lb. Chicory
1 lb. Sheep's Parsley
1 lb. Kidney Vetch
1/8lb. Yarrow
1 lb. Nettle

39 1/8lb. per acre

New varieties of clovers, grasses, flower seeds and herbs are being introduced every spring, in the meadows and upland permanent pastures.

Trees, shrubs and wild berries are being planted along the sides of the main ditches.

On this kind of pasture the cattle never grazed the hedgerows (pasture type cocksfoot and timothy are essential for good winter results), proof that all they required was in the pasture. Cattle also require more roughage when wintered outdoors, then use their stomachs more efficiently for warmth.

November, December grazing is achieved by resting 15 acres from mid August; January-early-February grazing by resting 15 acres from the end of August, which is fertilised with all farmyard manures available and, if

necessary, some organic fertilisers, sewage, blood or fish. We do not advise artificial fertiliser as it tends to make the grass too succulent and therefore prone to frost damage. When this happens the grass is not so digestible to the ruminant animal which prefers more roughage in winter months. This grazing was supplemented with silage put in the same field for night feed (which later proved unnecessary).

Each field received one of these winter grazings every 4 years. We eliminated the need to return any fields to a root break for autumn and spring grazing. Fertility built up very rapidly under this system and we will now be able to carry up to 110 cattle fed outdoors all the year round, supported almost entirely from the farm. Minerals prove to be necessary. Our Jersey herd is averaging 750 gallons per lactation with a 6% butterfat.

Future research and plans

In research we ploughed up some of the pastures that were not the fully comprehensive mixture and therefore did not yield quite so heavily. We used laying poultry and fattening pigs to fertilise them.

The pasture was ploughed out into strips 10 yds. wide, sowing mixed grain crops, herbal strips, strips of the existing pasture and strips of beans and pea crops, all controlled by electric fences. Large deep litter poultry

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pens were pulled down the pasture strips and the crops fed during autumn and winter. We were certain that this would produce good results. We proposed to follow the same system with pigs, and a similar plan with a unit for fattening pigs to bacon and for ham. Different root crops such as potatoes, artichokes, beet, celery, kale and carrots also were grown. A large metal alloy pig house was towed down the pasture strip. The pigs were allowed to root up the whole crop and dairy waste from our cheese-making which was piped to them; possibly only barley and wheat meal will be required as additional food.

The introduction of these ideas should enable us to rest one field per year in the pasture rotation completely from cattle, thus, we believe, eliminating the possibility of animal disease. The pigs will be kept on this system all the year round; this break in the rotation will enable us to introduce new pastures that are proving so successful with the dairy herd. From early autumn to early spring, using pigs and poultry for grazing, we will boost our soil to yet a higher state of fertility.

By observing what is happening to the soil at Fordhall, we think fertility continues to rise for the following reasons. A winter cover crop provides the soil with whatever it gains annually during undisturbed natural growth. It appears to feed the large animal population in the soil at a time when it is most active. A heavy crop that has been allowed to grow through to January enables

these larger animals of the soil, mainly the earthworms, to take back into the soil very large quantities of dying vegetation, passing it back through their bodies and throwing up large fibrous castings into which the root hairs of the plant grow, producing 1 inch of compost-like material on the surface of the soil, opening up 2 or 3 inches of soil into which the mites, flies, beetles and other winged animals return to hibernate, and feed on the organic material brought in by the earthworms. This cycle, when studied closely in October, November and December, produces very large quantities of natural compost that keeps the soil temperature constant. This constant temperature maintains plant growth into the late autumn, keeping alive and growing the large population of earthworms that have developed during the spring and early summer. The cover crop protects them and they remain working over a much longer period than they would do otherwise.

When the crop has been grazed in January, when all growth is at a standstill, the plant root area has developed the maximum food storage and all the residues from the cattle, after being on the field day and night, are returned to the soil. The soil population, aided by the birds, are not long before they have taken these residues into the top 4 inches. The activity of the larger animals of the soil makes the field very spongy and enables the water to escape from the surface so there is very little damage by poaching.

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It is noticed that clover makes quick early growth if this large cover of grass has been grazed; the birds are soon attracted to the leaf adding their manure during February and early March.

At this point we add any additional manures that may be available on the farm. An arable crop rotation needs to take place fairly soon after spreading has been completed (provided weather conditions are right) to avoid loss. As the spring temperatures rise, so the micro-organisms of the soil begin to attack this vast build-up of humus.

Conclusions

Here is the key to increased plant food. This vast variety of micro-organisms multiply, and many cycles take place, including the nitrogen cycle. The air spaces in the soil are filled up with free nitrogen, nitrates and other ions at a time when plant life is just beginning. The spring environment that sets microorganisms into activity is also the one required for starting dormant seedlings and perennial plants into growth. This surely is significant. The earthworm population passes everything through their bodies, again aided by the spring rains, bringing to the surface the fine particles of the soil and creating an excellent crumb texture. The first rotations mix this together, feeding a weed crop which adds yet again to the organic matter of the soil.

We find it is not important whether sowing is done in March, April, May, June or even July. For our pastures it is more important to make use of the available weeds naturally grown by the soil. April and May produce perfect conditions with the rising temperature for the micro-organisms to break down the organic material, providing vast quantities of plant food for the microorganisms to multiply at sowing time.

We find the best time to use any form of bag manure such as basic slag, phosphate, blood, lime, fish, or if none of these are available, a little organic fertiliser, is just before closing off the pasture for winter grazing, or in spring while rotovating spring weeds in.

We are now finding at Fordhall that there is very- little need for any of these fertilisers. The best fertility results are noticeably where fields are left ungrazed until January, or, with biennial root crops, March-April grazing.

The advantages with our grass rotation system are that the fields are never bare. These rotations help to eliminate plant and animal diseases. We think the battle for good health both in plant and animal is fought in the top 4 inches of soil with the larger animals and micro-organisms. The whole area in the early autumn and spring is one vast turmoil with an up and -down battle going on between all sizes and types of animals, bacteria, fungi and micro-organisms, held in balance by

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each other, the farmer using balanced rotations to nurse and study these vast cycles that go on in the soil.

We as farmers can only guess at what really goes on and judge from what appears to bring results, balancing the needs of all our plants and animals with the elements, assisting nature in her struggle to produce a surplus, and using that surplus for raising our standard of living.

All this research into rotational systems on the land and soil management has been taken into the buildings that house the pigs, poultry and new-born lambs and calves, the result is that disease can be kept under control by rotating the different animal groups around the houses. Allowing at least a year for each species, the natural bacteria, flea and viruses coming from the manure and bodies of the resident animals attack and kill off all the old pests and diseases from the previous occupiers and helps to build up very healthy resistance in the bodies of each group. Any nutrient left in the manure of the previous occupants is searched for and eaten, this serves as an inoculant against disease and strengthens their resistance to their own related diseases.

This is how the wild life of our earth of every description protect themselves mainly by family expansion, migration and moving around the planet in circles, from the elephant to the bee.

Our herd of cattle has now become a suckling herd for the production of beef and the sheep flock for lamb.

All the marketing is done through Ray Cornmell's butchery in Bolton.

We can arrange delivery through our own van and over-night delivery distributors to anywhere in Great Britain - as our logo implies almost "as the crow flies".

Ray has the qualification for the institute of meat at associateship level and he has achieved the food hygiene certificate. He will cut up your orders to your requirements, and vacuum pack it for dispatch and deep freezing. He requires about a week to process your order, arrange payment and over-night delivery.

A speciality is oak smoking which takes a little longer.

Fordhall beef and veal

Fordhall has a suckling herd consisting of 30 cows bred from the milking herds of Ayrshires and Jerseys which helps to provide the beef suckling mothers with plenty of rich milk to suckle.

Each mother when she calves is trained to take two more week old baby calves, this training is done after the mother has had her own baby free in the fields for a week. The calf is then housed with its new playmates for

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one week and mother is brought in twice a day to feed them. She is so pleased to be relieved of the milk that she does not argue, and naturally, all three calves are hungry. The next week they are given a one acre paddock to feed in whenever they like and they learn to live as a family group and to recognize their mother and to sleep in the open together. In the third week they are allowed to go back to the suckling herd having learned how to graze on the herbal organic pastures, where they remain with no other feed, winter and summer for up to 2 years. The calves father comes from the best beef herds and is changed every 2 years to retain virility.

At between 4-6 months a suitable calf is selected from the suckling herd for veal. The flavour of both beef and veal is unique to Fordhall due largely to feeding on the permanent herbal pastures managed and rotated to provide all year round grazing, with no added fertilizers, and no other animal feeds.

Fordhall sheep and lambs

Our flock of sheep are, like the cattle, a mixture of breeds which maintains health and virility. They use the whole 150 acres of the farm which is divided into 3 areas. They live for 2 years at a time on each area, which protects them from their own related health problems, like worms, husk and scab, etc. New mothers are reared from the flock but a fresh ram joins them every 2 years.

All the lambs are born in the open in late spring and they live entirely off our old organic pastures. All lambs are free of dip until August when only the accepted soil association dip is used. Veterinary medication is only used in emergencies, which is very rare.

The mothers are allowed to live out their whole lives on the farm.

Fordhall pigs

Our piglets bred on the farm on our free range organic system, or bought at weaning, are then fitted into the farm rotational system following the poultry. This means a patch of land and a house to sleep in which has been free of pigs for one year. This protects both pigs and poultry from their related diseases worms and mites, and they are allowed to root up the whole plot which is subsequently reseeded with herbs and clovers and grasses for a different variety of poultry.

The pigs are given day and night feeding (with a low night light provided) consisting of a mixture of organic and steam cooked and rolled grains - equal parts of wheat, barley, peas, beans and soya meal and 5% fish meal. Freshly mown grass is added to about 15%, all mixed weekly on the farm to maintain freshness.

Bacon is cured in the old fashioned way, salting for about a month by Mr Sadd at Shrewsbury and it is always

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available at Ray's butchery. Oak smoking can also be provided. A short spell in the microwave will take out the salt if desired before cooking. Hams can be boned and cooked to order.

Fordhall poultry and eggs

Our poultry including turkeys, geese, game fowl, ducks and chickens are all free range and are hatched and mothered by bantam hens. Fresh houses for sleeping in and fresh pasture to eat and scratch in for worms etc Spring water ponds are available for our ducks and geese.

A home mixed ration is always available night and day and consists of organic wheat, barley, beans, peas, and seaweed supplemented with steam cooked and rolled peas, oats, maize and for high protein, soya meal and fish meal. (Steam cooking cleans the grains of any storage chemicals and reduces the nitrate or nutrient content to the same as the organic portion of their ration). The mixture then has about 10% fresh grass cuttings mixed in before feeding giving in all a very healthy all year round feed which produces the very tasty meat for which Fordhall is famous and Ray can supply you with in his shop, and by overnight deliveries.

All poultry are plucked and topped and tailed on the farm and dressed at the butcher's premises, and boned and

smoked if required.

All orders are cut to your requirements and packed at Ray's butchery in Bolton. Ring either the farm or the shop.

Our invoice, including delivery charge will be posted and immediately on receipt of payment your order will be dispatched for overnight delivery Orders can also be collected at Fordhall Farm.

Fordhall is open to visitors for afternoon tea in our old world garden and picnics on our farm walk and nature trail.

My book "The Farmer, the Plough & the Devil" is available on request.

Ask for Price List.

50 years of research and progress to organic farming.