

**SHEEP: FLYING FLOCK KEPT MOVING  
20 YEARS EXPERIENCE AS A  
'GYPSY SHEPHERD' 10**

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- Grass and livestock
- Arable
- Specialist sheep
- General farming
- Farm workshop

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**PRACTICAL Farm IDEAS**

Volume 13, Issue 1  
Spring 2004

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**SUBSCRIPTIONS**  
Tel: 01994 240978

£14.25 - 1 yr, £24.00 - 2 yrs, £35.00 - 3 yrs  
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ISSN 0968 - 0136

EDITOR'S NOTEBOOK

Last issue we reported on the innovations of David Stone, a farm engineer who went to Rycotewood College in Thame Oxfordshire, and now we find ourselves with another Rycotewood man... Neil Harrison. Motor racing has replaced farming at the college, yet the enthusiasm of tutors such as Evelyn Pearce created a generation of thinking and innovative graduates able to continue working positively an industry which is going pear-shaped. Farming in Britain, and elsewhere, is already feeling the effect of these closures, as the shortage of skilled and educated workers increases. The national economy will be the next to find it actually needs farming, for food, our balance of trade, inflation, rural wealth, countryside maintenance, not to mention the psyche and well being of the rural and urban population alike. Our contributors and readers continue to amaze us with their innovations, which continually expand the pool of ideas into which all can assess and select according to their individual needs. As we start our 13th year, many thanks and God bless.



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Farming's biggest growth  
inspectors. Inspectors me  
set aside, inspect for anim

assess for hygiene, scrutinise the environmental impact both for wild life and pollution, examine the farm operations for health and safety, and more besides. Each of these inspectors has a job to protect, a expense claim form to fill in, a mortgage to pay, and a pension policy to maintain. Their reports need to reflect their essential role in the industry. So each inspector highlights the deficiencies he finds, requires improvement and further visits to see the work has been carried out satisfactorily.

None, to date, have had the power to demand the scrap heap is cleared, the mud removed and the the yard made as pristine as the unused industrial estate.

Next year - in fact in about 9 months time - this too will change. A new tranche of farm inspections will start. These are for the all important Single Farm Payment, and the warning is out for those with 'untidy' farms to de-clutter and sanitise, as their single farm payment is at risk. Too much 'clutter' - to borrow a phrase from the all-important domestic 'make-over' TV programmes - and the inspector has the power to declare the farm as not meeting cross-compliance measures.

Advisors love to cause alarm and worry - they get more business that way. They need to blow the warning whistle before the heavy hand of authority comes down from on high.

Advisors are going around telling farmers to cash in their scrap piles while the price of metal is high. Clear out the stuff which isn't being used, and

wheelbarrow wheel, a chunk of car tyre or any of the thousand and one items contained in the scrap heap. Useful stuff which costs nothing to source, which saves not only the purchase price of something similar in the store, but also the petrol and road miles to get it, let alone the time taken in doing the job. Our advice - don't get rid of your scrap heap, but don't let it spread throughout the total farm yard. Keep it in bounds. Put a wire fence around it, so it looks official and animals can't get in. Put a notice on the fence FARM RESOURCE CENTRE.

When the inspector comes, make certain to show him some of the benefits which accrue from this resource centre. Show him you back copies of Practical Farm Ideas, so he can see how other farmers make use of theirs. Educate him.

The farm scrap heap suffers from an identity crisis. Tell the inspector it provides a store of parts and metals which are recycled on the spot. That the bearings, shafts, frames, wheels and so on which make up the redundant machinery contained therein can have a new and productive function without being transported 100 or 1,000 miles, and then melted down to a base metal. That getting parts from the scrap heap saves road miles and hence the environment, as well as time and money.

A quick glance at the headlines is enough to set anyone to wonder if there isn't a little hidden hand of poetic

from up on high:  
r footballer  
reck injust 10

years; a politician says one thing for years and then does the opposite; a businessman desperately trying to make his food company project a healthy image dies an unhealthy death.

The world oil price is sure to be in next month's papers. The last time oil was so interesting was in the 1970s. Since then we have managed to find enough to run two generations of SUVs, to have everyone taking to the air, and most transport running on tyres rather than tracks.

Farming relies on oil, so this talk is worrying. Experts say don't worry. The recent \$ recovery will help slow oil prices. Arm-twisting in the Middle East has led to Saudi Arabia promising a surprise increase in crude oil supplies of more than 300,000 barrels a day to its key Asian and European customers next month. The elections will also help save the situation. Oil hikes slow the US economy, as consumers drive the same, but spend less on other things. Bush can't afford an economic slow-down.

There's another card up the President's sleeve. In the run-up to the 2000 presidential election, oil prices touched a high of \$37 a barrel, and in response the US released 1 million barrels of oil per day from the its strategic petroleum reserve, enough to take the froth out of the oil market. If necessary, he'll do the same again. Oil won't go over \$35. In the long term we see the chances of Iraq (the world's 2nd biggest reserve, Russia, more scope in China) coming on stream. Strikes in

## EDITOR'S NOTEBOOK

Nigeria and Venezuela have hit production, but can be solved. So medium term supplies are also looking better than today.

**In Britain farming** has a more pernicious problem. Gordon Brown has decided to triple the rate of duty on tractor diesel, which adds 10% to the price of diesel.

**We discover** the questions over the MMR vaccine were led by a doctor-scientist paid £55,000 by solicitors trying to prove a scientific link which was never there. Scientists dictate what is safe and what is dangerous, and regulations follow their advice.

Independent science is vitally important. We all have to trust the findings of the scientists working in food, health, medicine as well as engineering, and the MMR revelation was front page material, combining children, health, doctors and dishonesty. Not all dodgy science attracts this attention. Some attracts little at all.

Take, for example, the science behind the ban on on-farm burial of animal carcasses. The Ministry created mass graves during the Foot and Mouth crisis. The science which condemns the farmer from burying dead stock apparently failed to apply in this case. Are there no environmental costs associated with incineration, cremation and rendering? The issue is unattractive to the press, so the new rules go unquestioned. regulation.

**Tesco has been skilful** and lucky in the game of 'Retail - the real life form of Monopoly'. The company seems determined to win the game, by good trading and acquisition. For the past 20 years they have avoided landing on 'Go to Jail'.

Over the years their 'Chance' cards seem to have done as well as their dice throws, and the lucky run seems to be continuing. Despite their 26.8% of the UK grocery market, their management has managed to acquire another group of Adminstore convenience stores - Cullens, Hart and Europe Foods - with the blessing of the Office of Fair Trading. This is because the company is said to have only 15% of the convenience market.

This is only half the agenda. The Tesco effect - where prices are driven down through aggressive buying as much as selling - keeps the all important Retail Price Index on an even keel. The Tesco effect is a necessary part of government policy. Changes to the way the Index is calculated has almost halved its rise, but the spectre of inflation hangs over GB Ltd like the sword of Damocles.

**How would you react** to a motorway cutting through your farm? Most of us would be pretty devastated, even if generously compensated.

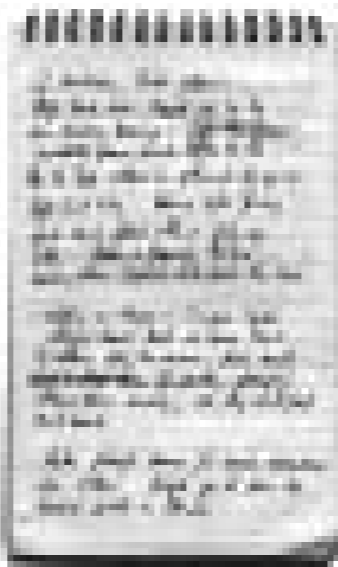
John Dunning decided to make the most of the decision. He negotiated to have his own service stations on the M6. If his peace was to be disturbed, at least he would have a business out of it. Since the motorway opened in 1970, his Tebay Service Station, 1m north of J38 by Penrith, has developed a real reputation for the best food food on the motorway network - and his is the only privately owned one in existence.

Northbound carriageway sales are up 50% at the start of a Bank holiday, while the one on the south gets a 100% increase when visitors return. The shop is a major outlet for local farmers and food producers, and the food is fresh. This means items can be sold out, as it takes time to get in new supplies.

There's something really great hearing about people who make the best of adversity. The motorway has changed John Dunning's life, but he hasn't let it ruin it.

**Greater London** has a food market of 7.5m people. What percentage of their consumption comes from abroad? 8%? 20%? 50%? The staggering truth is that 80% of the food they consume is sourced from overseas - according to Don Curry, the government's farming advisor.

The conclusion is that farmers in easy reach of the capital should be tapping into this market. But they can only do so with the support of the companies they are currently supplying. One of the mysteries of farming is seeing commodity crops being grown tight to major urban conurbations - a fact which seems to suggest the food



trade is happy to truck in from abroad and not seek out growers and producers closer to hand.

### Dear Sir,

Since the outbreak of Foot and Mouth disease, the government has introduced a system that can track every cow born in Wales to its current home in Yorkshire, and its calves to their stalls in Sussex. How is it the Home Office is completely unable to trace illegal immigrants in this country?

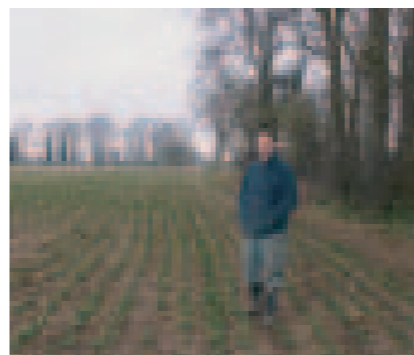
Should DEFRA be put in charge of immigration, or should all foreigners landing in our country be presented with a cow on arrival?

Henry White-Smith, in The Telegraph

### Old Woodburning Rhyme

Beechwood fires are bright and clear  
If the logs are kept a year.  
Chestnut's only good, they say,  
If for long 'tis laid away.  
But Ash new or Ash old  
Is fit for a queen with crown of gold.  
Birch and fir logs bum too fast  
Blaze up bright and do not last.  
It is by the Irish said  
Hawthorn bakes the sweetest bread.  
Elm wood bums like churchyard mould,  
E'en the very flames are cold.  
But Ash green or Ash brown  
Is fit for a queen with golden crown.  
Poplar gives a bitter smoke,  
Fills your eyes and makes you choke.  
Apple wood will scent your room  
With an incense like perfume.  
Oaken logs, if dry and old.  
Keep away the winter's cold.  
But Ash wet or Ash dry  
A king shall warm his slippers by.  
Anon.

## MADE IT MYSELF



## BEANS SOWN WITH CULTIVATOR

Clockwise from above: Rob inspects beans on April 7, just after thinning them; bean crop on April 23 shows good spacing after the thinning work with the dribble bar; Vicon drill is raised so the PTO shaft can pass through the headstock easily. The drill has a 'A' frame which locates to one welded on the cultivator; front view of bean seeder shows how the Vicon drill mounts on the top of the Shakerator cultivator.

Most field beans are planted by spinning the seed on stubble and then ploughing them in. Whether it's the system or the season which is responsible for the adage "you either have too many beans or none at all" it is hard to say - but beans can be fickle. Ploughing beans in means some seed will drop 6 or more inches, and be covered by a heavy soil. Other seeds will find themselves in a void, with little initial soil contact. The method has an element of 'hit and miss' about it.

Planting beans directly using a cultivator with an air seeder mounted on top reduces the cost and time taken to do the job. Judging from this year's results the system is a winner. Rob Renwick sowed more than 200 acres of beans with the machine this autumn, and plant populations have been huge.



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So many he had to do some thinning using a dribble bar with glyphosate, driving across the rows.

"I was using old seed and was a bit concerned about germination, and was also worried whether the seeds sown from this machine would like the system. So I put on 2 cwt of seed to the acre, which in retrospect was way too much. But the dribble bar managed to increase plant spacings quite effectively, so I'm hoping for a decent crop this year."

The 3.5m machine has 9 legs giving a row spacing of 410mm, and was £1,000 in a sale. Shakerators are popular machines, and the legs are expensive - the leg, bracket, shim and tip cost £140 from Spaldings, and more from McConnel. Rob thinks he will be able to reduce the tines to 7, giving a 500mm row spacing, to get better plant spacing and a reduction in costs.

- **QUICKER THAN PLOUGHING IN**
- **ONE PASS JOB NOT TWO**
- **LOWER SEED RATE**
- **SEEDS AT EQUAL DEPTH**
- **SEEDLINGS HAVE EASY ROUTE TO SURFACE**
- **NONE BURIED UNDER CLODS**



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Clockwise from top left: Shakerator leg with seed tube welded to the back; rear view of bean seeder; small nuts pull through and act as protection for the legs; the flat frame of the McConnell machine makes it easy to fit the drill. Rob strengthened it by extending the headstock

The Vicon drill was an unloved machine resting in a hedge for some years. Being made almost entirely of plastic helped keep it from deteriorating, and a good clean and grease had it working well. The hopper outlets are reduced to nine, the rest being blanked off with expanding foam - wine corks (champagne) would do equally well. The outlets used are distributed evenly around the mushroom to equalise seed flow into each one. The grille preventing straw and other material getting into the blower is opened, as the bean sample was dirty and Rob was concerned about bridging in the hopper. The drill works really well, and the seed flow makes a good noise so you can tell when there's a problem. The drill metre wheel is off the Accord drill, and works fine on this machine. It will move from one machine to the other.

The seed tubes are Kverneland Suffolk coulter tubes, welded to the back of each tine and cut off to provide a hole

which won't block and the tine cuts through the ground. The bottom of the tube is carefully placed 4in above the foot. The rear roller was a crumber roller but this had major problems in wet weather, filling up with clay. The roller is vital, as it controls the working depth of the tines. It is attached with arms on either side of the machine which have a series of holes and a pin is put through the one most suitable. When the machine is lifted the roller drops to rest on a stop.

The Shakerator legs are marked so you can quickly read the working depth off the side - better than having to lift and measure. It makes it easier to set the rear roller correctly. Each leg is bolted to the frame, and the bolts used as small flat heads which pull through when they hit a rock or heavy root, acting like a shearbolt.

**Followup:** Rob Renwick, Kingstons Farm, Cadley, Marlborough, Wilts Tel: 01672 512039



Clockwise from far left: lightweight loader extension is fitted with the general purpose crane extension - note the angles between the main beam and the headstock, and the jib end; close up shows the headstock in detail, and the accurate cut out of the angle fitting; like the crane jib, this has two lengths to which it can be extended. The angles look peculiar when the fork is laid on the ground, but come into their own when in use. The fork tines are used pointing down, as in the picture. Using them the other way would make it impossible to detach the bale from them.

## LOADER EXTENSION LIFTS BALES TO THE BARN ROOF LIKE TELESCOPIC HANDLER

- expands versatility and work of tractor fore-loader
- reduces the need for expensive tele-handler
- releases farm handler for loading bales in field etc

The laws of physics say that if you add an extension to your loader and it will lift less - but it will get it higher. Even a telehandler can't defy these laws, though the salesman might try to persuade you that it can! The lift capacity is reduced in direct proportion to the amount the jib is extended.

This extension is about 6ft. It has two main uses - lifting bales to the top of the shed and handling 1/2 tonne fertiliser bags. The frame has Quicke brackets. It isn't a substitute for a telescopic handler, but does quite a bit of the lighter work a handler might be required to do.

The design is clever, in that the angles have been worked out so as to provide the jib with the maximum of flexibility in raising items from the ground and lifting them high into the air. This means the main arm is canted upwards in relation to the headstock. The jib takes a fork for bales and a hook for general purpose lifting. The top of both of these points down, so when the jib is raised the attachment is near horizontal, which means, in the case of the bales, that the spikes can be

removed leaving the bale where it's wanted.

Most of the implement is made from 5 x 3in box section. The top struts are 2 x 2in. The main beam is 5ft long, and the extension a further 4ft., with 3' 6" inside the main beam. Joints have been neatly made, but there's no great evidence of strength. There's a logical reason for this - for safety reasons the machine should not be overloaded, and this design makes certain it won't be. At the same time, the jib itself stays as light as possible, so the majority of the raised weight is from the load rather than the carrier.

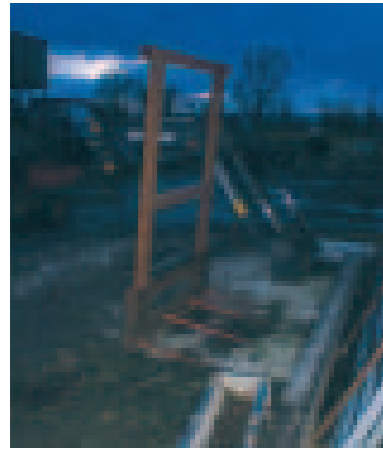
If you have a need to lift lighter weights further and higher with a tractor foreloader, and have so far still resisted the luxury of a Telehandler, here's a possible substitute with a conveniently low price tag. Many people have bought telescopics but use them more as expensive tractor loaders, rarely needing to extend the mast. Here you have an extension, albeit one of limited capacity.

## DEOSAN TOWEL DISPENSER

The roll stays clean, is where you want it on the wall, and the paper comes off as it should. Instead of an expensive dispenser from the shop, this one uses no more than an old handle as a spindle and a drum as the holder, and it all looks made to fit together!



## HESSTON HANDLER ADDS SAFETY AS WELL AS SPEED



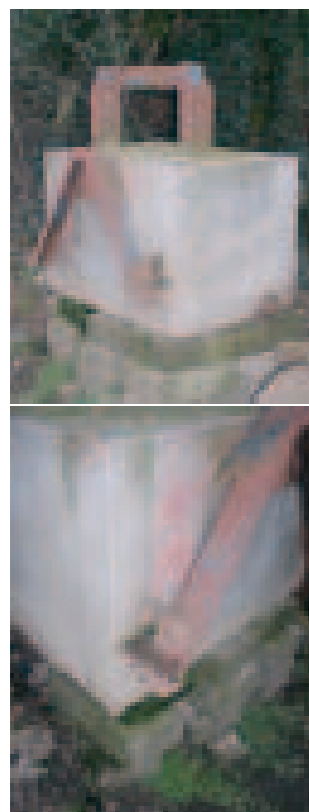
Above: high back - which lifts off the frame so the machine can be used to handle single bales up to roof height - and a decent loader make this a real time saver. Right: four tines are bushed in position. Note the way the back drops into the frame, making it a flexible machine. Top holes in the side are used to handle round bales. Far right: Quicke brackets are still used on the farm as they are simple and universal - an adaptor plate fits the loader

- prevents accidents with bales falling on tractor
- lifts three bales at a time
- converts to round bale handler
- easy to make in farm workshop

It's quick work unloading an artic trailer of D1010 or other large square bales if you can handle them three at a time. With the tight rules on driving time, haulage companies want a rapid turn around.

This handler goes on a Howard FX16 loader fitted to a Ford 7600, and it needs a tractor and foreloader with capacity. A rear weight is essential as well. You then have a machine which lifts stacks of bales from a trailer (or for that matter on to the trailer as well). The back is tall enough to prevent the bales from falling back onto the tractor, which is the major danger when doing this job with the wrong equipment. The back is also strong enough to allow the spike to be tilted back at an angle, so preventing them fall forwards.

The spike can be quickly altered to carry two round bales. The centre spikes are removed and located put directly above the two outside tines, so each round bale is supported, preventing the centres becoming loose and the bale turning.



Above right: Rear weight is symmetrical and provides an equal pressure on both rear wheels. Right: frame lugs pass through the side of the tank

## REAR WEIGHT USES WATER TANK

A galvanised water tank with a hole in the bottom makes an ideal tractor weight. weighing in a just over a ton, the weight is ideal for a fore-loader on a 90 - 120 HP tractor, providing rear wheel grip and relieving the front axle of undue strain. When making a weight, be careful not to over-ballast - it causes major damage. The tank looks neat and won't rust for many years, and can be filled with concrete with no difficulty.

The A frame has a robust 2 x 4 in frame made from heavy channel section, and this goes through the side of the tank in three places - at the top of the A frame and at its base. The steel frame inside the tank was made on the bench and then dropped into the tank and the three fixing parts were pushed through their holes. The A frame was then welded on and positioned so the frame hangs symmetrically. The frame extends through the top of the concrete so that the weight can be handled with pallet forks when necessary.

Loader tractors last longer and suffer far less abuse when fitted with rear weights, even when they are 4 WD. The weight is positioned over the rear axle instead of the tractor pivoting on the front one. A good weight like this can give a 2 WD tractor the same kind of performance as a 4 WD.

Care must be taken not to attach too large a weight on the rear, however. The strain on the bell housing is magnified, as the weight on the loader is pulling one way and the rear weight another. Tractors built without frames have all this strain on the bell housing flanges, which will break and the tractor effectively gets broken in two.



## BULK TANK MAKES USEFUL WATER RESERVOIR

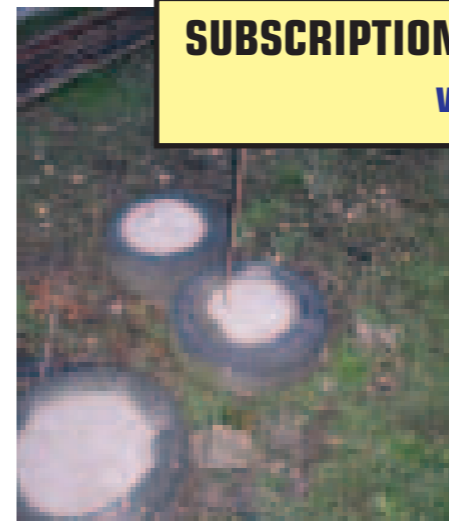
Above, from left: bulk tank stands outside - lids keep dirt out; it takes an age to fill the sprayer with this water pressure; submersible pump keeps tank isolated from the sprayer

Filling the sprayer from this disused bulk tank instead of using a hose on a tap saves a lot of time. Your sprayer may be small and a conventional bowser larger than you'll ever need, but cutting the time to fill the sprayer will be much appreciated, particularly when the tank is available for nothing.

Stainless tanks like this 500 gall Dairycool have no value. There seems to be no export market for them, and their scrap value is minimal. You will have paid £3,000+ for it 20 or more years ago, but you'll have to write the whole value off. So using it like this is cost free.

Alan put a ball valve in the top so when it's full the water is turned off. There's a pump in the bottom so the water can be pumped into the sprayer and there's zero contamination of the tank from sprayer hoses.

## MOBILE FENCING STAKE



The off-centre hole for the fencing stake is deliberate, not accidental. It's there to prevent cows knocking the stand with their feet when they pass by. It only takes a small movement for the wire to become slack, and that's the time when adventurous heifers start experimenting and making bids for freedom.

Moving the base means lifting it onto the rim and rolling - a central hole - maybe a short length of 2in plastic drain, would allow a bar to be pushed in and the base wheeled with clean hands and a straight back.

## CALF CART SAVES LABOUR



- moves calves of all ages on bike wheels
- made from easy to find motor bike wheels
- makes calf moving a one person job

Readers often say that the simple things included in Practical Farm Ideas are the ones which they find really useful to make themselves. Here's a real gem! Whether you're shifting a new born calf or ones which is a month or so old, this cart is the way to do it.

"I can't understand why every livestock farmer doesn't have one!" says Glos farmer Alan Brookes. "Instead of struggling with string around the neck or a halter which has a 50% chance of slipping off the calf's head, you wheel them at your pace. When you get to the new pen, you can leave them alone as you open the door and get things organised. It makes one man calf handling so much easier, and there's no need to start a tractor or anything like that"

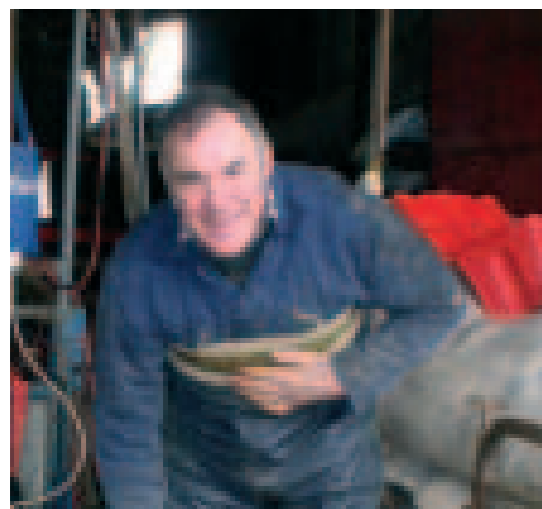
The cart uses a pair of motor cycle wheels, has a wooden floor and solid mesh sides. With wheels in the centre it is nicely balanced. The big wheels make it good on rough ground. The door opens, and as it naturally rests nose down the floor is the loading ramp.

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FOLLOWUP (BOTH PAGES): ALAN BROOKES, HAW STREET FARM, COALEY, DURSLEY, GLOS

## 'GYPSY SHEPHERD' KEEPS LARGE FLOCK ON TEMPORARY GRAZING

- focussed management for profits
- bright future for gypsy shepherds
- all mobile equipment
- low costs through large scale
- system works with, not against, sheep



This page, clockwise from top left: sheep turn-out trailer carries 25 ewes and lambs to the grazing fields, and does a trip every 12 hours; diagonal penning for ewes and lambs means they stay segregated and families don't get split up; sides of turn out trailer take off so it can be used for bales, implements or anything else out of season; up the ramp on the turn-out trailer.



This page, clockwise from top left: main transport trailer carries 125 ewes on two decks; Cartright trailer has removable deck which stands on these fold-down legs. It has a twin air braking system; bale trailers and box trailers use the Scammel system - they are all ready to connect up and go; dolly for the ex-BR Scammel trailers is reversed under each trailer and the legs are moved and braked taken off automatically.

Describing himself as a 'gypsy shepherd', David Sullivan has kept as many as 5,000 sheep - yet owns not an acre of land.

Today, closer to retirement, he has reduced the numbers to 1,500, with a part-time help only. His business is a mobile one.

He planned the main business in the 1980's, and has kept very much to the original formula.

"A ewe likes to be alone when lambing. She goes off into the hedge or hollow and makes a nest to lamb in. The nest is important - it enables the lamb to recognise its mother through her scent, and the ewe knows her lamb through it's bleat and scent. In the first 12 hours they bond, and they need to do this without the distraction of other ewes and lambs around. The modern system takes no account of this vital part of the job. Farmers put 30 ewes in pen together, and they lamb in a noisy hubbub which is stressful to all. Space is so limited the new-born can easily get trodden on by other ewes. Scenting becomes much harder, and cross infection much greater."

### Flying flock logistics

The flying flock takes full account of the present day logistics and costs and takes real account of the sheep's needs. It needs discipline to keep to the plan, and skill not only in handling and man-

... flock from grazing reliably, and to do more than bringing them

### Transport based on the tractor and not the Land Rover

In 1980 he took the decision to move his flock with a tractor and trailer and forsake the convenience of the Land Rover or the local haulier. The tractor gives him a legal 15 mile radius from his cottage in which to carry his flock. He uses a 70HP Zetor 2 wheel drive tractor, and is on his second one. This is adapted to have twin line air brakes, using equipment from Tractair Ltd of Hull. Their modification to the single line air braking system fitted as standard to Zetors provides him with the necessary back up to brake a large four wheel trailer loaded with 120 ewes.

The tractor runs on 20p/l fuel instead of the Land Rover's 80p. When recently moving 250 ewes 8 miles, he did half with the Land Rover and the other half with the tractor and trailer. The tractor's half was done in one load, and took 2 hours to complete. The Land Rover needed 3 loads to move its 125 ewes, and this took 3hrs 30mins, despite being faster on the road.

David's first Zetor would sometimes clock up 100 miles in a day on the road, the record being 130 miles. The tractor had 7,000

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hours when he sold it, and he got £2,500 less than when he bought it new.

Sheep are walked shorter distances, and will do journeys in 4 mile hops. If he has a large group to move, he finds it easier to move them on foot, resting them overnight in a field and then doing another 4 miles the next day. Resting places are quickly ring fenced with three strands of electric wire, and this has included using a village green! Some flocks will walk 30 - 40 miles in the winter season as they go from one grazing to another.

Using haulage at a regular speed, the increase in business is regularly between 10% and 20%.

Tractor trailers have delivered a trailer load of wool up to Thame - a 44 mile journey - using the tractor. Delivery of farm produce can be done outside the 15 mile radius.

### Equipment - sheep trailer carries 120

The double decked trailer is from ATS tyres, where it was used for carrying the scrap ones away from depots. The body lifts off the chassis and stands on its own legs. The dolly has a drawbar fitted, and the brakes are twin line air operated from the tractor foot pedal. When loaded, speed behind the Zetor is not so quick, especially up hills. The twin decked container is a commercial one, and carries 120 ewes in a load.

### Turn-out trailer

This conventional flat trailer has a section added in the middle to extend the deck to 25ft. The fittings are all removable, so the trailer is used for bales and other general work when not needed for moving ewes and their new-born lambs to pasture. The trailer carries 25 ewes at a time, and this is the average lambing rate for the flock in each 12 hour period, so two trips a day with the tractor and trailer are needed to take the lambed ewes to the new grazing. Before this was built it took 12 trips each 12 hours, and

...ally fitted compartments. The front doors of these trailers can be opened in walk up to the front.

Doors are closed behind them as they fill up from the back. Lambs are ewes are always together and not parted. The sides of the trailer are 2ft 6ins long and fit together with vertical bars, exactly as Poldenvale equipment. This design means the new parts add to the existing Poldenvale hurdles already owned, and when it comes to sell them, there will be a demand from other Poldenvale owners. The trailer has a roof on, as this is compulsory for all sheep transport - despite the fact that the sheep would travel just as well in the open. The trailer gets used for many different purposes, including carrying people on farm 'walks' and other events.

### Securing land for his flock

Having as many as 5,000 sheep with no permanent home for them means securing a succession of short term grazings. At one stage David was grazing 37 different farms in the season, but today these number a mere eight!

Because he can fence land quickly and securely, he is able to take on any kind of grass or arable ground, and put sheep on until it is grazed down. He takes on barley stubble, sows turnips and grazes them off before the land is ploughed, and will have the land under this arrangement for no charge. The benefits to the next crop are well recognised. Similarly he can utilise under-grazed grass land, and sow other grazing crops for short term use.

Reliability, both of his fencing and his vacating the land, is a corner stone of the system. If either of these were compromised, he would soon find it hard to get a supply of land in the area.

A sole occupancy licence links the arable farms he uses, which cuts down the paper work needed.

### Flock management

All lambs are fattened for market, and mules bought in as replacements. He buys in around 1,000 gimmers which are kept for a year before lambing in May. They are always electric fenced, and learn to respect the fence from the time they arrive. Half the gimmers are sold and half kept for his flock.

Dogs are an important part of the management team, and are trained to a respectable standard. He likes his dogs to have 6 months playing with the family so they are kind and biddable, and then starts working with them. He keeps three at any one time, a trainee, a prime of life worker, and an older dog. They need to work together and be reliable for basic work, but not necessarily be good for trials work. Sexism reigns - he always keeps working dogs, not bitches, as he gets on better with them.

Shearing is a problem with the flock spread over a wide area. Access to suitable yards is not always so easy. Ewes are shorn in the first week in September, and so have the summer in full fleece. Shearing coincides with weaning and a move to autumn and winter grazing.

"You'd think the sheep will be uncomfortably hot, but that's not the case. Wool is a marvellous insulator, it keeps heat out as well as heat in. Australian Merinos are in full fleece in very high temperatures, and are seen grazing in full sun. If we shear in hot weather, you often see the shorn sheep taking to the shade of a hedge or tree and the ones with their coats still on in full sunlight. Another example comes from the desert - Arabs always are covered, and often dress in wool." There's a small plus from the Wool Board for this system - David gets a small bonus for 'storage'.

Ewes are lambed in a 15 acre paddock which is divided into two parts. The system is known as 'Drift Lambing'.

David Sullivan's lambing shed, a fortnight before the start. Ewes are moved from one paddock to another and when lambed are moved to the grazing location.



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### Drift Lambing

Lambing outside provides ewes with all the seclusion and opportunities to bond with the lambs, and doing this in May means they go straight onto grazing which is at its best. Ewes are moved into the lambing paddocks a few days before they are due, and are moved from one to the other on a 12 hour basis. Those which have lambed are left where they are, and moved at the end of the 12 hour period straight to their grazing. This means each ewe has a minimum of 12 hours to recover and bond in the lambing 'nest' before being disturbed.

Newly born lambs have their navels dipped in iodine, are castrated with rubber rings and docked before going out to their grazing, and the ewes have their udders and teats checked. The gathering allows time for lambs to be sorted, and strong triplet s are removed for cross fostering. All ewes and lambs are treated with Vetrazine against blowfly strike before being released.

Moving the flock from one side of the paddock to the other takes little time, and the lambed ewes are moved with

a special trailer fitted with 25 compartments.

Lambing in May has the advantage of 18 hours of day light, and David rarely needs to be working in the field during the night. The field is well shaped so all corners can be seen, and the ewes and the whole get on with it. Crossing tups are mostly Suffolk.

Drift lambing gives the sheep the best chance of sorting themselves out, though muddles will occur. Cross fostering is done by making small pens in the field with hurdles.

### Lamb production

Lambing percentages show scanning results of 175% and a lamb sold percentage better than 150%. The good weather in May provides fewer challenges. Lambs are slower to suck in May, but their need to immediate colostrum is less as the chances of hypothermia are reduced. Handling ewes and lambs soon after birth gives the shepherd the chance to give weak lambs additional colostrum.



Clockwise from top left: mobile dip is used regularly; exit from the foot bath is over the drawbar; mobile footbath is built on a caravan chassis and has two old oil tanks which hold 16 sheep between them. The sheep stand in the zinc for 30 minutes while the next batch are being crutched, injected and foot trimmed; ramp into the foot bath; wool sack frame makes filling easy, and opens to release the filled sack; this building makes a good place to handle the sheep - David crutches, injects and does the feet of around 150 a day during April

### Treatment - the mobile dip

Taking the dip to the flock is quicker and easier than the other way around, particularly when so many sheep are involved. The dip is a commercial machine made by Wilkinson. Disposing of used dip is an increasing problem, as licenses now are needed for each site, rather than each dipping machine. The cost of each is £169. The costs and problems of dipping encouraged David to miss dipping last year, and the worst happened and one flock became infected with scab. By the time it was noticed and treated, a further two flocks were affected. This year the dip will be out, despite the costs of the business. It's a real example of animal welfare being compromised by additional legislation, taxation and bureaucracy.

### The mobile foot bath

All his sheep are seen to for drenching, vaccination, crutch and foot trimming, and foot bathing. He does 100 a day in March and early April. He works through them in groups of 16 which are sorted with a George Mudge trailer. The 16 are clipped and trimmed and injected and then loaded into the foot bath which is made of a cut up diesel tank fitted to a 12ft caravan chassis. The corner steadies of the chassis keep the

trailer stable, and the roof over the top prevents the dip becoming dilute with rain water. The inside of the tanks are thickly painted and the base lined with wood to prevent the solution coming in contact with the metal of the tank.

The trailer has running boards so he can sort the sheep in the tank if necessary without going in himself. The chemical is zinc sulphate, and each batch of sheep are left standing in the tank while the next 16 are being trimmed and injected. This takes around 30 minutes, so all sheep's feet get a proper soaking in the chemical, which David finds very effective. Tanks have 2in drain plugs so the chemical can be disposed of as required. The dipping trailer was made 10 years ago, and so far the steel tank material has remained sound.

Sheep experts and researchers say zinc sulphate is the best solution for sheep, provided the feet are soaked for 15 minutes or more. The recommendation is to clean and trim before bathing, and efforts need to be made to keep the footbath clean - difficult when you have sheep, some which might be agitated and nervous, standing in there for a period of time!

Disposing of zinc sulphate is best done by putting the used liquid into a metal drum and leaving it for some time. The chemical reacts with the metal leaving a deposit of zinc and water.



**The fencing system**

Ridley equipment is used here without exception. David finds it reliable, which is the prime requirement. It is also suited to one man working.

Stakes are bundled into 20s and are stored on ex-supermarket flat trolleys in the workshop / store shed. The bundles make it easy to load and handle a large number stakes, and prevent them getting damaged. Wire reels, all of which are Ridley, are also stored on trolleys. Fencing is done using the Land Rover and trailer, which carries the ground driven reeler for rolling up the wire. The Land Rover works well at a slow walking pace, starting as fence stakes are picked up. The bonnet of the Land Rover is covered with a checker plate, so it becomes a useful platform for stakes, one which is at the right height.

As the photos show, he has a massive quantity of fencing, so there is always enough to fence the next grazing and time to collect the fence from the last field. He has found the Ridley equipment to be reliable and strong, so repairs to stakes, reels and so on are infrequent. Being able to buy individual spare parts is also a great help in cutting costs, and reduces waste.

Clockwise from top left: Land Rover bonnet has checker plate and is used to carry the stakes erecting and collecting fences; stakes are racked on a supermarket trolley, and bundled into 18s; reels of wire are stacked on trolleys and are handled four at a time; there are always batteries on charge - he uses mostly Hotline energisers; electric netting is rarely used, but the lengths he has are rolled; corner posts are racked and those needing repair sorted.

**Drinking water uses header tanks filled from bowser**

- suitable system for calves, horses, small herds

Many arable fields have no water, but this isn't a problem as David has developed a standard set-up using a trailed bowser and header tanks to fill up 300+ gallons of water.

Header tanks are sited away from a water base and alkathene pipes lead to the troughs. The tanks can be sited outside the field, the main essential is a reasonable fall to the trough. Some tanks serve a single trough, others more than one. Fields grazed for many years have their tanks permanently in place. It's so simple for him to service an additional tank he set one up for a local horse owner who he saw carrying buckets to her horse over the heat of last summer. A tank and a trough was all that was needed, and then he filled the tank when he passed on the road.

The water cart is two 2000+ gallon tanks on a pair of trailers. A pto pump sucks water from the stream - if the stream is low he fills from the mains. - and the same pump then delivers the water. A double tank can be used for more stock.

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Clockwise from top left: the water system in this field is easy to see - the tank under the tree (stays cool) leading down to the trough. Tank is filled with the bowser from the road; trough in the horse field shows the simplicity of the system; connection to the base of the juice container; the water bowser is a useful system, as the rear trailer can be parked and the first used separately if need be; the PTO pump on the first trailer fills both the front and rear tanks, and discharges water from them as well

**Deadstock disposal uses home built incinerator**

- bio-secure, no farm to farm transport of dead animals

Dead sheep in this incinerator disappear into dust within 24 hours. David designed it and had it built some years ago, and uses it exclusively for his sheep. The machine is an insulated container containing a fire burning wood - mainly off-cuts from a builders yard. The base of the fire is built on sand, and the sides have nearly 12ins of kapok and glass fibre insulation.

The fire is started and the sheep loaded through a door in the top, where they rest on a grille made from 1in dia solid steel bars. The fire dries the bodies and they then combust quite slowly, the heat in the chamber being retained by the insulation. Temperatures get very hot and the sheep go to ash - a programme on BBC a few years ago showed the same phenomena where people were burnt to a cinder although the house never caught fire. The same thing happens in this incinerator. There's almost no odour, and after the bodies have dried, they go without making much smoke.

The machine is mobile and weighs around 4 tons - there's a lot of sand insulation in it. The ash is raked from time to time, and disposed of in a registered dump.

Below, from left: the wood fire is beneath the carcasses which are loaded onto a grid. There's nothing left after 24 hours; the machine is started with a gas poker, but otherwise uses no fossil fuels, involves no transport, creates no odour, is risk free and runs at no expense; the incinerator was lit under an hour, and already the interior is getting hot



**“It’s often said that dogs owners take on the appearance and character of their pets, and the same can be said for shepherds. Work with Romneys, and you’ll find they are always facing the wrong direction - just like the Kentish shepherd who looks towards the sea and Europe rather than Britain. Mules, like their owners and breeders, are bright, quick and intelligent, and Scottish Blackface big and proud. Welsh breeds, on the other hand, are small, wiry and active, and each one thinks they are an individual!”**



Top row, from left: mobile raceway is 24ft long riding on a braked trailer axle and has a top strength chassis; exit from race is through a shedding gate and a guillotine, all designed to be used with the minimum of labour; penning has sheeted and regular gates - there’s almost as much again on the trailer sides; raceway gate holds and controls sheep entering the raceway.

Middle row: slatted floor due to the shearing at the slatted floor and ‘way’ and you can see through - they go much the flat edge and one angled, the guillotine fits either side.

Bottom row: heavy chassis has full braking; spare gates store on the side of the raceway; angled gates slide up for transport.

**The mobile raceway**

The trailer raceway opens into a pen which can take 300 sheep. The penning is made on Poldenvale lines, and some Poldenvale sections are used as well as home made ones.

between so the muck is pushed through it, but in fact it has gaps of 1/2 to 3/4in. The race has a guillotine gate at the end which can be operated anywhere along its length by pulling a cord. The end also has a shedding gate. The sides are adjustable in width.

The 24 ft long trailer is fitted with brakes, lights and carries all the penning. David says the trailer doesn’t look half as good as the new aluminium ones available today, but wonders if these will be in as serviceable a condition after 20 years near continuous work - the record his trailer has so far achieved. None were available when he built it.

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**Sheep production offers real opportunities**

The success of the management system makes David immensely bullish over the future of sheep in the UK. There’s a healthy market for the product, and production in the rest of the EC is relatively small. New EC states are all importers of sheep meat, and there’s strong demand from outside the EC as well.

Added to this, the sheep plays an important role in environmental management and other stewardship. You need sheep, or their manure, to maintain grassland.

In many situations there are no real alternatives, as mechanical trashing and mowing is not just expensive, it can’t be done. So areas under management will need to have sheep to keep the landscape in order, and they are increasingly finding it easier to import flocks rather than take over the responsibility of flock ownership.

“Political changes alter much in farming, and no more so than in the sheep industry,” claims David. “For years there was the motivation to increase production, and this in turn changed to supporting existing production levels under quotas. Now the pendulum is moving away from production towards the maintenance of landscape and the environment. Sheep are the unstated cornerstone of much environmental policy today. Land owners under schemes will soon be paying sheep farmers to graze their land.”

**Short term licence farming**

In 1982 David was awarded a Nuffield Scholarship to study sheep farming in New Zealand. His interest was in the human

factor. How their share farming systems worked, how farmers and the agricultural industry was regarded in New Zealand, the New Zealanders perception of Britain, and British farming.

He found share farming, both with cows and sheep, to be a system which in many cases worked well. His report says:

“Enormous value was placed by those involved (in successful share farming) in the satisfaction of helping one another

Value.”

He describes how an established farmer invested in another farm some distance from his home, and found a young qualified man who was able to run the farm on a share basis. After 12 months the owner paid a visit, found all in good order and the couple delighted with their achievements, and proud they had a growing stake in the business. The owner left he confessed to a powerful emotion - the privilege had been his to give this couple a real future in the pursuit of his own agricultural interest.

“It is a fact,” writes David, “that financial success or empire building can bring barrenness in human relationships and the richest, and most successful are often the most bankrupt in human terms.”

He found share farmers, with a stake in the flock or herd, gain a real change in attitude towards their work and their partners. They had the incentive to stay in the agreement for many years while they built up their stake, and were then able to budget and plan their lives on a longer term basis.

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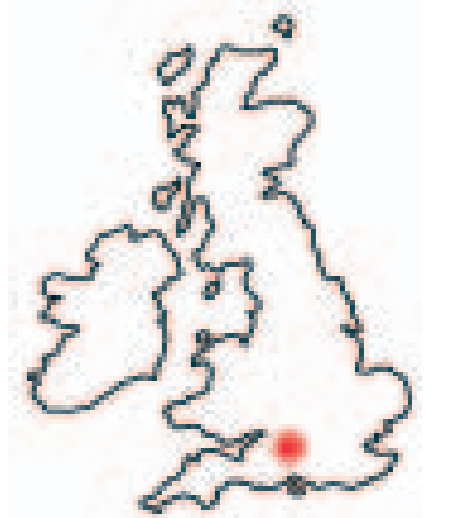
**Share farming sheep in the UK**

1. Avoidance of a tenancy. A 50:50 share farming arrangement as widely practised in New Zealand, which means individual sheep in the flock are owned by the landowner or the share farmer, is likely to create an agricultural tenancy in the UK, as the share farmers sheep have continuous access to the land. The safe precaution is for the flock to be in joint ownership.

2. Avoidance of a partnership. Each party needs to show they have a separate relationship. In this partnership. In this partnership. In this partnership. So separate businesses need to be established.

3. The landowner must be seen as ‘trading’ if his income is to be treated as ‘earned’ under schedule D, and also for certain capital gains reliefs. He must be seen to be actively buying inputs and selling produce.

4. Accountancy. The relationship between the two parties provides the proportions of each share. In theory bills and receipts need splitting to this proportion, but the accounting work involved is in many cases impractical. Block allocation of total areas of expenditure is probably better. However, there have been major advances in both accounting and banking, and today the separation of bills and receipts is easier than it was thirty years ago when the CLA published “Share Farming” by Richard Stratton, Michael Gregory and Richard Williams.



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## Farmer-shareholders need to be wary

These days it seems company directors make themselves more money when they fail than when they succeed. Take Michael Green, who walked away with a 'loss of office' payment of £1.8m, plus further share deals worth £13.2m, when he failed to be appointed boss at ITV.

While Michael Green makes the headlines, there are thousands of others making similar deals for themselves, and it's not just in entertainment. Be aware that directors of the farm co-op in which you have shares may request share options, loss of office payments and other expensive packages. The scale of these payments may be nothing as grand as Greens, but their effect on the business could be enormous. In many respects, these service contracts effectively hand over ownership of the business to the directors.

Termination deals need watching, and those who are members of farm co-ops should be prepared to resist unreasonable requests and not be steam-rolled into giving the business away. For these contracts make the debate about directors' cars pure chicken feed.

Green's deal - with a total pay out of £15m - may be exceptional, but his business was big. Agreements worth a tenth of his in businesses a tenth the size and with slender profits are far more damaging. The result is a real weakening of the company. The penalties of removing the lack lustre chief executive are so great he becomes a permanent feature. Other board directors may well put up only a feeble fight, as they see themselves having a similar chance at riches in a few years time.

### Green isn't the only greedy director

Farmers find themselves financially involved in the businesses they supply. They sell to co-ops or marketing companies in which they have a shareholding - fatstock to co-operatively owned abattoirs, milk to dairy businesses, grain to co-ops. Farmer members invest and provide these businesses with an attractive source of funds.

A representative number of them are elected as directors and other office holders - some having voting powers and others simply a say in the proceedings. Many company

boards find the farmer makes a good representative. They are trusting and non-contentious, are busy people with little time to be whistle blowers - until it's too late. Farmers are also generally straight thinkers, whose understanding and appreciation of modern business practice can be wanting. Some can be easy meat.

Farmer directors need to make time to discover company contracts, and get them properly interpreted, explained in a way which is understandable to them, as shareholders of the business. Severance contracts can, like Green's, involve beneficial share options and payments sufficiently large to have a significant effect on the business.

## ...be aware directors of the farm co-op in which you have shares may request share options, loss of office payments and other expensive packages...

It's easy to go with the flow, and accept these contracts as part of modern business. Easy to be persuaded that these generous contracts are needed if the executive's unique talents are to be retained, and not allowed to escape down the road to a competitor. Delicate matters such as executive contracts and remuneration are frequently lost in a complex agenda (often drawn up with the assistance of the executive himself), placed to come up at the board meeting at a time of least resistance.

The executives concerned will have done their lobbying as well as their homework. Soft touch directors, and those who may have similar ambitions as far as their contracts are concerned, will be won over well before the meeting takes place.

Executive packages are of obvious importance to the people concerned, and many will pursue the terms they want with a determination of a terrier. Those involved not only have the incentive and the skills to achieve what they want, they often have the time and resources as well. While farmer directors spend their non-board time on the tractor and in the milking parlour, the chief executive often has the time and freedom, the office, secretary and other necessities to secure the deals they need.

Farming businesses need to make themselves fully aware of the real consequences of such severance contracts. They need to make certain the contracts are not an incentive for failure, or the disincentive for the business to merge with others and benefit from economies of scale.

### Confidential assistance and advice

Readers who are involved as directors of agri-businesses such as grain, milk or meat co-ops and others are invited to contact Practical Farm Ideas for confidential assistance and advice. Call Mike Donovan BSc (Agric Econ) on 01994 240978

## House prices to plunge 20% in the next 3 years?

In 1994 the property market was on its back. Repossessions were rampant. Pundits, including the Governor of the Bank of England, Eddie George, said there would be no change for six years.

In 1996 it seemed to us like a good buying opportunity. Farmers could invest in local housing, upgrade it if needed, and hold it until the market improved. Since then we've had a few phone calls of thanks. One reader bought five run-down properties for £300k and now has a portfolio approaching £2m. So the house market is of relevance to farmers.

The market now is in exactly the opposite position as in 1994. So is it going to crash and, if it does, what should the prudent investor do about it?

Economists seem to agree the market is going to fall. Some predict tumbling prices as early as this autumn, while others anticipate a gradual cool-off and an end to double-digit inflation. Whatever the case, one thing is certain: the raging property bull market of the last three years is at an end.

### The facts are these:

The number of first-time buyers in 2003 was down 40 per cent on the previous year. Dynamic growth unravels when new buyers cease coming into the market. Overall, people trade up to more expensive homes, and the process repeats itself down the line. The base of the pyramid requires new homebuyers, and when these dry up, the market falls. It has always worked in this way - prices rise to a point when new money is not available for investment, new buyers are absent and prices start falling. Until recently, new buyers were young couples with their earning lives in front of them. This last boom has been fuelled by the buy-to-lets - older buyers responding to the poor performance of paper investments and putting their savings into property instead. These people have no need for a roof or home and can decide to sell overnight, and are likely to do so if they become anxious or see better returns elsewhere.

Houses today are over valued. The ratio of house prices to incomes is now the highest ever recorded, the average being five times average income. Prices fell in real terms (adjusted for inflation) by 30-35 per cent after the booms of the early 1970s and late 1980s.

This compares with average rises in the UK alone of 15.5 per cent for this last year. Some areas, including Wales, saw prices rise by more than double this. The phenomena is not confined to Britain, and the borrowing and economic expansion which has occurred on the back of the growth in property values is also worldwide. In San Diego, house prices rose more than 16 per cent last year, and in Los Angeles they were up an incredible 29 per cent.

### What do the experts predict?

Even the big mortgage lenders, with a vested interest in talking up the market, are predicting a sustained slowdown. Nationwide and Halifax lead the pack predicting rises of 9

and 8 per cent. The Woolwich and Hometrack predict rises of just 5 and 4 per cent respectively. This is little different to the predictions they made in 2002 for 2003, which was for a 'steady as she goes' rise. Nothing for the chancellor or investors to get worried about.

Yet they were wrong - the market boomed. Forecaster Robert Bootle from Capital Economics got closest to the mark in 2002, when he said it would be full steam ahead close to 20 per cent in 2003. He predicts a major down turn starting in the second half of this year, and a fall of 20 per cent over the next three years. 300,000 home owners would be put into negative equity - they will be borrowing more than their property is worth - and their number will increase in 2005 as the market continues to fall.

### How will this leave the 'buy-to-let' investor

Much depends on the calculations they made before buying. Those relying on a rise in their asset value will face tough times, and will be the first to get out. Those whose rental incomes provide a positive return of 4 - 6 per cent will find their return on increasing as the value of their assets goes down. Rising returns are unlikely to be matched by other forms of investment.

Will the supply of tenants dry up, as houses become more affordable? Unlikely. People are increasingly mobile, so rentals are in demand. There are thousands who will remain priced out of the market, and marginal buyers have little incentive to invest in a falling market. Migrants from the ten new EU members will increase demand for rentals.

The predictions remain good for buy-to-let, even if the house price market crashes. It will provide buyers with an opportunity to invest at more reasonable prices. There won't be the pressure to take hasty decisions, and there will be room to negotiate.

So the answer is - don't buy to let until property loses 20 per cent of its present value, and then go in. Those who are in should stay in, provided their initial purchase had a solid foundation. Their asset value may fall, but returns are going to be difficult to match with other 'safe as houses' non-speculative investments.

### What about land prices?

If property prices fall, building plots will falter, but are unlikely to fall much. Profits on new houses have provided companies in the market with a substantial cushion, as sale prices have exceeded expectations. Farms and agricultural land are independent of the housing market, and agents we have spoken to see no down-turn in demand. New farm buyers, unlike house buyers, fund their purchases from sources outside the property market - the farm is not the top end of the housing market.

Agricultural land will continue to be a safe investment. Static prices for the past ten years may lack lustre against houses, commercial property and also gold, silver and other metals. It looks poor against corporate bonds and gilts, but has certainly had a far easier ride than equities. Agricultural land will stay largely static in value just as long as the profits from using it remain weak. If and when these should lift, the response is likely to be immediate.

## Agricultural land values

Not all rich people own land, but enough do for the Sunday Times to include this table of values in the appendix to their Rich List of 2004, which lists Britain's richest 1,000 people. (If you're on it, please contact the editor!). Compilers Strutt and Parker report land values remained unaltered from last year in every sector and area.

	Poor land	Good land
South East England	to £1,500	to £2,500
East Anglia	to £1,500	to £2,750
East Midlands	to £1,500	to £2,500
West Midlands	to £1,400	to £2,300
South West	to £1,400	to £2,300
Wales	to £1,000	to £2,000
North of England	to £1,000	to £2,250
Scottish Lowlands	to £850	to £2,500
Scottish Highlands	to £40	to £1,400

## Turbo-charging your farming business

Many farmers regret the fact their children have no interest in the family farm, but would rather work at quite mundane jobs instead - being a postman, truck driver, working with a JCB. They don't fancy a life being tied to a cow's tail, or being the #2 until they reach middle age. A job off the farm has the possibility of freedom, of days off on holiday. It means a break from the tradition of having all three or four generations of the family together, if not under one roof, then in adjoining houses.

Maybe the reasons so many young farmers are voting with their feet and getting jobs away from the family farm and the industry as a whole has got as much to do with the present management at home - the farming business you're running today.

Will your accounts for the financial year look much the same as those for the past year, or even a decade ago? It's a question which changes little from year to year, but the changes of the farm make change unless there is the spur to do it. Any business which basically does the same this year as last, and will do the same next year, is not particularly exciting. Add the hours, low pay and the problems of pecking order, and the exodus is understandable. What the business needs is a degree of turbo-charging.

### Making the most of assets and opportunities

"You know what you ought to do, Dave? Use your workshop to make bespoke wrought ironwork - you've got real talent / set up a micro-light landing strip / build a facility for horses / grow vegetables and sell them to the local garage." Farmers get so used to well intentioned free advice from their friends and acquaintances from the city and suburbia, the words are like water off a duck's back.

"Not another expert who thinks they know how to run this business - I've been doing it for 30 years and it just isn't

as simple as these bright people imagine," they say to themselves. We want to shut them up, tell them to take their management advice to colleagues in their own company.

Why are so many of them so keen with their advice? Because, for many, they see your farm as a basket of opportunities, while you view it a collection of liabilities. The person working in manufacturing, finance or the service sector needs to create their opportunities from the desk and factory. They see all this wonderful space, some special skills, and see it all coming together to make an income every bit as good as that provided by Grainfarmers or United Milk. Their experience is of life on the other side, where people queue to gain access to the country, pay through the nose for aspects of the farmer's life he enjoys for nothing, and, as a result, takes for granted.

### Getting out of the groove

If the business is trading as if the needle was stuck on the LP record, there's a real need to give it a shake. While the business stays static, the people concerned get older, have different capabilities and, at some point, will leave the stage. While all viable full time farms are eligible to receive some free consultancy from DEFRA, is this enough, in terms either of time or quality?

## Employing people without shedding tears

Most farmers, or their wives, are the personnel managers of the business, as well, of course as being every other kind of manager needed. Hiring staff is fraught with complexity. There are endless laws and regulations to observe, and there's a need to get them right. Employment tribunals apply to farming as much as other industries, and although farm staff are perhaps not as litigious as people in other industries, there is always a chance of problems occurring.

The Employers Handbook from Kogan Page publishing carries a price tag of £37.50, but is said to be comprehensive and up to date. The Institute of Directors recommends it, and there's little doubt that it should be on the shelf of your business. It has changed significantly since its latest amendments. It covers the letters, forms and procedures to be used and applied directly to the business. Go to a solicitor and the bill incurred to prepare just one of these would probably work out at more than the cost of the total book.

The Handbook goes through the whole process of employing staff, from recruiting staff (what you can legally write, and what is illegal to put in advertisements, to writing employment contracts. The whole business of paying workers is covered, and then also there is a section on disciplining workers.

Once the employee is legally installed, there's the business of performance management, holidays, and getting rid of unsatisfactory staff. Managing employees is also dealt with, as are other non-legal issues.

**The Employer's Handbook, edited Barry Cushing, Kogan Page Publishing £37.50 (includes CD Rom of template documents).**

## World's greatest communication tool looks doomed

You either love or loathe electronic mail, but there's no denying it's immense power and convenience. The world has, in the last decade or so, really become more of a village than a vast planet. While the downside may be that the wild places have become accessible, there are fewer places to hide, the positive benefits are enormous. Ideas and technologies can be exchanged with farmers and advisors on the ground. Feed-back is instant. Human suffering and exploitation is less easy to hide.

Yet the tech revolution seems to be headed for collapse. Email spammers have so clogged up and damaged the system, it is now possible that it will break down. British spammers send 15 billion messages a year, and AOL, just one of many operators, handles 3 billion junk messages a day. Spammers typically send 80 million a day, and hope for a sale to one in a million.

Steve Linford, who runs an anti-spam organisation Spamhaus, says "If they sell 80 packets of Viagra a day, that's a lot of money from one PC on the kitchen table." Steve believes the system is under threat, as the proportion of spam to real emails rises from the current 70% level this winter to an expected 80% this spring and 90% by the end of the year. He criticises the government's Electronic Communications Directive, which, despite its grand title, has only resulted in encouraging spammers to settle in the UK, which allows the spamming of business addresses. "We warned the Government that if they tried to regulate spam, rather than ban it, it would only be made legitimate" he says.

The majority of farmers in Britain, and all around the globe, who benefit from email is enormous. The system has proved itself from registering cattle, obtaining price quotes for both supplies and for products for sale, banking and many other functions. Email means fewer trips to town, fewer phone calls and letters, and, in most circumstances, a faster response. It enables contact with groups of people all at once, and allows those who are happy to talk to strangers, to communicate and exchange ideas. It may be frustrating and have a sense of mystery (how does it really work??), but the benefits are just too great to sacrifice for the benefit of clever clogs whose misuse is in face abuse.

While the penis enlargement potions, porno action and get a date introduction messages are obvious spams, there are others which have a veneer of respectability. There are letters from abroad from Princes and Ministers wanting to access large caches of money. These can be well targeted. Practical Farm Ideas had one from someone claiming to be a dispossessed Zimbabwean farmer who was living in South Africa. He claimed he had a large sum deposited in Amsterdam, and requested our help to release these funds so he could set up farming again, this time in Britain. He wanted help in finding a farm, and would be generous in return. It was an appeal which opened a chink, sufficient for us to reply, if only to find out more. There was an immediate phone call back. The story was expanded, and it sounded dreadful. His family had been decimated, his daughter raped in front of him, the younger children remain in shock. He wanted a place to

bring up his children in safety, a place where they could live reasonable, decent, Christian lives. We bought time to consider it, but in two days he was back on the phone, with the pressure turned up a notch. "Why respond if you're not going to do something?" "Don't you trust me?" "You have no idea what this situation is like, living in your safe country" "All I'm wanting you to do is collect these documents, sign them and forward them. I will deposit the money in your account..."

Something said this was scam, and my phone went down. The pressure was just a bit too professional, the man I was dealing with was no farmer - though I could have had the presence of mind to test his knowledge by finding out about his farm, tractors and machines and crops and livestock.

Spam emails are normally exactly what you might expect them to be. Low cost funds which turn out to be the opposite. Home working opportunities which end up losing you money. Products such as low cost printer cartridges which never arrive yet the money comes from your account. On-line university degrees which save you the three years of study, and the exams, but which are recognised no-where and brand you as a sick fraudster when you're found out.

The internet is a major part of business and living today, and there is no reason why it should not contribute to our future lives to an increasing extent. Yet at present it remains a sick and purile experiment, one which puts temptation - in the form of sex, riches and status - in front of the weak as well as the strong. The results are, at worst, crimes of the worst bestiality and degradation committed by people whose minds are affected, as well as trials and prosecutions of people who have become entrapped by it all. The internet provides lawyers and the police with a growing source of business, which generally which has few dangers. How much better if real controls were developed.

## Any old iron, any old iron!

China's industrial output grew by 19% last year. The country's need for raw materials has changed the direction of some world markets, copper and other high value metals being well recorded. Their need for supplies of iron and steel have been no less dramatic, and scrap has become an important source.

Scrap demand from China has nearly doubled in two years, and the UK industry has responded to the extent that 7.5m tonnes of scrap iron will be exported this year, representing three quarters of the total imports to China (11m tonnes).

This demand has raised the price of scrap steel from £40 in 2001 to £120 a tonne today. Scrap is not only worth collecting - some are finding it worth stealing. Hence the disappearance of man-hole covers in various cities across Britain. Their value, at £7-10 as scrap has created some nasty holes in the streets of Gloucester and Grantham in particular. Replacing the covers may work out at £700 a piece, as many have to be specially made.

The rise in the price of scrap is likely to remain, as China produces little of it herself. The industrial revolution produced enormous quantities of steel in Western counties, and this is now eagerly needed by the Chinese to make domestic goods, vehicles and in heavy engineering.

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## Exploiting a buyers market for machinery

Buy a new car today and you will pay 12% less than you did in 2000, according to Alliance and Leicester. Car makers not only search for customers, they need to find savings. Components, even for the more expensive marques, are increasingly be sourced from low-wage countries such as China and India, and fears of quality are not longer a problem.

Commercial vehicles are in the same position, with too many trucks looking for drivers.

The big question for farming is - will the tractor and farm machinery market follow suit? There are increasing signs that India and China and other Asian countries will be the source of the more basic tractors as confidence in their products increases. Is there anything to prevent these countries using their low costs to effect on more sophisticated engineering? European farmers have remained loyal to their national machinery manufacturers. The 'global market' has really only developed in the last ten years as tractor manufacturers have consolidated and grouped themselves to the extent that few in the industry who owns who. Implements in many European countries are still very national, with French farmers favouring Kuhn, Italians Mashio and Scandinavians Kverneland. British farm machinery manufacturing has suffered the same fate as the car industry here, resulting in a wide choice of imported products. Remaining companies are small compared to those in Europe, and increasingly are serving specialist markets home and abroad.

So while the car buyer pays less each year for his new set of wheels as a handful of global manufacturers slog it out in markets around the world, the farmer experiences a more balanced market. Yet the 'asking price' should still be considered a guide.

Machinery buyers will always do better when they give themselves time. If you're going to change the combine, drill, forager or whatever, the time not to do it is when you need the machine, even though there may be more equipment advertised at that time. Whether buying new or second-hand, there's not the same ability to walk away and find a more suitable machine. The same applies to parts. Fitting new tines to the Haybob during hay making means paying whatever price is being asked. The same is true of plough and cultivator parts, and most items of equipment.

Of course there are many times when parts are needed immediately. Breakdowns happen and machinery needs to be fixed. Suppliers can be tempted to capitalise on the emergency. A few quick phone calls, to the manufacturer, parts dealers and other suppliers can soon provide an indication of how fair the quote is.

## The fate of the 'lumpinvestor'

There are some City internet pages which are always worth making time to read, and the Daily Reckoning is one of them.

Here's what they recently said about investing:

"The idea that the average person somehow becomes an 'investor' simply by buying an investment fund or a share in

Yahoo is a myth and a fraud. He is not an investor anymore than a man who tries to make money at a slot machine in Las Vegas is a businessman. He may wear a suit and tie. He may carry a brief case. He may even tally up his expenses and net them against his income, but he's really just entertaining himself.

Warren Buffett is an investor. Carl Icahn is an investor. These are guys who study businesses - in detail - and decide which businesses they want to own.

The little 'investor' doesn't do that. He merely reads an article in the paper. People are getting older, he discovers. 'Oh,' he says to himself, 'I'll put my money in nursing homes.' But this knowledge - that people are getting older - is the kind of knowledge that Nietzsche called 'wissen'. It is public knowledge...abstract, vague, misleading, and for an investor, worse than no knowledge at all. Just because the average age is increasing doesn't mean you're any more likely to make money in a nursing home stock than in a nursery share. If you buy on the basis of the news, or what your neighbours suggest, or a tip from your broker...you are just gambling.

In order to invest, you would have to know a lot more; you would have to do actual research, like Buffett does. You have to have what Nietzsche called 'erfahrung' - practical, experienced-based, direct, often personal knowledge.

The average guy who buys an investment fund is not an investor at all; he's a chump, a patsy, a schmuck. We say that affectionately, of course. Were it not for this guy, most of Wall Street would be out of business. Because what this guy really does is not invest, but consume. He's a consumer of Wall Street products...he's the source of financial firms' revenues and profits. He's the reason people on Wall Street drive around in big Mercedes and have mansions in the Hamptons.

The trouble is, you can't get rich by giving other people your money. And you can't get rich by spending it, either. The whole US economy only gets bigger by, say, 3% per year on average. So, if you really did 'invest in America', maybe you could expect your investments to rise at a 3% rate. But if you consume the financial industry's products, you have to realise that the sellers/packagers/brokers/financiers and so on have to get a cut. And those fellows don't work cheap. Nobody wants to buy 'investment' products from a poor man. So, like Vegas casinos, Wall Street institutions need to spend a lot of money to keep the lumps coming in the door.

Warren Buffett has estimated that the financial industry gobbled up nearly a third of all investment gains. Plus, the average lumpeninvestor has to provide higher returns to the 'smart money,' the people who actually know what they are doing. This doesn't leave much for the little guy."

### Smart investing and dumb money

We know what the dumb money is doing...refinancing its home in order to buy tech stocks at 100 times earnings. But what's the smart investor doing? Thomson Financial reports that US corporate insiders continued to sell their own stock last month. For every share they bought, they sold more than 28 shares - bringing to 11 the number of consecutive months sporting a sales-to-purchases ratio greater than 20 to 1. People who follow these things said they had never seen such extreme selling.

Why would insiders sell? Often, they are the people who started the business. At some point in their lives, they have had enough. Or they get sick...or divorced. There can be a lot of reasons for selling your own stock. Typically, the ratio of sales to purchases remains around 2.25 to 1. At 28 to 1, something is different. Either people who run corporations are dropping dead at an alarming rate, or many of them figure that the lumps are making a mistake: they're bidding more for corporate stock than the people who know best think it's worth.

The message is clear - lumpeninvestors shouldn't expect too much apart from an initial feeling of satisfaction that their savings are in good hands. Despite increasing controls and regulations, the investor from the sticks still receives the crumbs rather than the best of the loaf.

## Tips to help every farmer cut costs

The ratio of the cost of fertiliser against the farm has narrowed continuously. The cost of inputs for each acre of the residue left to cover labour costs and provide profits has become less.

There's an increasing necessity to farm with fewer inputs, making better use of those which we use. Plain old fashioned good housekeeping still has a valuable place to play.

Clogged air filters use more fuel, give more wear and less power, yet many farmers are still too busy to set aside the time to do the necessary servicing. Or don't have a servicing notebook in which they record the dates and hours of changes.

Reducing field work by increasing the width of implements will save both time and fuel, as will any reduction in the number of passes needed in crop establishment. Matching performance with what is really needed will also cut fuel usage - chopping grass silage to 40mm rather than 20mm will make a real saving in fuel use, yet produce a product of equal feeding value. Ploughing to 160mm (6.5ins) rather than 230mm (9ins) makes a useful saving which in most cases is achieved without compromising quality or production.

Technology can help as well. Precision farming is there not simply to maximise production, but will also reduce input costs.

The latest multi-spectral imaging techniques, described in PFI Vol 12 #3, enable machines to 'see' the crop being fertilised, and adjust what's put on the what is needed. It sounds so much more accurate than the precision system of yield mapping and soil sampling.

Yorks subscriber Robin Barker grows cereals using precision techniques on his farm. He's looked into imaging as the next step forward, but has some tricky questions about it.

"The method must rely on the ambient light shining on the crop, and in Britain this varies hour by hour. How does the machine take account of the changes in light intensity, and also the direction from which it comes? Light shining at an

angle on the crop will reflect very differently to when the sun is higher in the sky. Working a field in the shade of a hedge or wood means the light on the crop is much reduced, and this needs to be compensated for if the system is going to be fully accurate."

Robin sees the need for some basic down to earth research from Silsoe, NIAB or other institution to measure whether all these, and other factors, are relevant worries. It may need to analyse plants manually and then compare these results with those given by the spectral imaging. Maybe green light works in a very different way to blue and ultra-violet.

Spectral imaging has the advantage of using to information from the actual crop rather than historical information from previous seasons. Light sources, and soil types in the USA are very different to those in Britain. The prairies have weather patterns far more consistent than we do - one bright day follows another. Their soils are similar, with the

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hundreds of miles. Soils of varying parts of varying usage have

a really vast amount of data - from satellites, the tractors and implements themselves and light sources as well," says Robin. "The real problem is processing and using this data to our best advantage. The tools we use need to process this into instructions for man and machine. And it all needs to be done at an affordable cost!"

## Do you have any machinery you would be prepared to hire?

Finding machinery for hire can be a difficult business, so we are wanting to help by developing a database machines and owners. It will be part of [www.farmideas.co.uk](http://www.farmideas.co.uk) and access will be free of charge for both sides.

Please email the details of your machine, or your requirements for one, to [mike@farmideas.co.uk](mailto:mike@farmideas.co.uk), or phone them through to 01994 240978.

Hiring farm machinery is an intelligent way to acquire the kit you need. You pay for what you need, and the payments are all tax deductible in the year incurred. There's no need to store the machine, you're not committed to it for next year, or indeed next week if you find it has drawbacks.

Income for owners helps defray the cost of ownership.

## The legal way to making a fortune

There's no better way to making a fortune than making the product you sell a legal requirement. Think seat belts, food packaging, medicine bottle caps, prescription drugs, electrical cut-outs - the list is endless. Behind each of these legally required innovations is an inventor sunning himself on a Spanish beach.

Making your product a legal requirement takes the hard

work out of selling. Instead of having to persuade, you just have to supply. It guarantees sales, and for some, a fortune.

Getting your product or idea to be a legal requirement means highlighting and publicising the risks involved in the way the job is being done at the moment. Get some credible scientific evidence, ideally from a university department of "not-for-profit" organisation, and use it to attract the attention of politicians. Underline the current dangers to the right people in power over some decent claret at Simpsons restaurant in the Strand, and you're halfway to the goal of getting the existing practice banned, and making your product the solution.

Take the prosaic business of spreading slurry. Muck and slurry has been spread on farmland for a few thousand years - pretty much since the dawn of agriculture, or civilisation as we know it. Despite this provenance, it doesn't mean we've been doing it without incurring possible hazards. Have a product which does it better, with lesser risk. Slurry has always had an odour. The chances are it has had an adverse effect on some people who are survive by living in place.

Spreadwise make up many years, put the slurry. They have shared the market for this equipment with a handful of other companies, and some farmers - see the Practical Farm Ideas Vol 12 No 4 - have made their own. Spreadwise now have an injection system which is more costly than the spread-on-the-surface machine. It's a relatively new ideas and so few farmers have it. It costs more to buy, and more to operate. You need a bigger tractor, and there are far more parts to break and wear out.

Fred Purcival who owns Spreadwise is wanting to get the standard system of slurry spreading outlawed, as it now is in Denmark. The logic is that what is good for Denmark is good for Britain. Ignore the differences between the two countries - the intensity of Danish agriculture (they have so much pig slurry it has to be taken by barge to be spread miles from the pig units); the density of the population, the low lying topography of the country.

Outlawing regular umbilical slurry spreading could make Purcival a very rich man, and at the same time give another headache to livestock farmers. Injecting slurry does have environmental advantages over surface spreading. There's less loss of N, less odour and grass contamination. But this is no justification to outlaw the conventional system as used by farmers and contractors all over the country.

Take the analogy of the motor car. There are major environmental advantages in small cars over large. Yet the present fashion is to drive bigger vehicles. The 4x4 is used as regular urban transport, despite their pollution, fuel consumption, road space, and poor manoeuvring visibility - let alone the damage they cause when they hit pedestrians, cyclists and even people in lesser vehicles. No politician wishing to retain his seat would dare propose any controls on their use, despite the benefits this would bring.

## Maize ground produces early ryegrass



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**Mark and Hazel did a proper job in October and it shows it's true colours in April, despite the cold spring and their late season farm.**

This stand of ryegrass, pictured on April 23, was planted after maize was harvested in October. Costs were £20 for the 'After-Maize' seed mixture sown at nearly 20kg / acre, a further £20 for a top dressing of N, plus cultivation costs which was a heavy discing followed by sowing a power harrow combination followed by ballast rolls. The spring application of N is controlled, as a heavy application will not have time to be absorbed properly by the plants.

Despite the slow spring, the results will provide a good start to the silage season, the grass going into bales.

Hazel and Mark Crockford have a 350 acre mixed farm carrying 130 cows. Cereals are both fed to the herd and also sold. The ryegrass will be ploughed and drilled before May 14.

CAP reform may well change the policy over cropping and dates, but won't change the fact that a good stand of ryegrass can be had after maize, and that establishment costs are reasonable.

Facts are needed to discover how establishment costs can be reduced, but at the end of the day it's a real pleasure to see a crop as dense and healthy as this: whether it is used for strip or zero grazing, clamp or baled silage. The task is to grow it as cheaply as possible and get the maximum milk production from the sward grown.

**Followup: Hazel and Mark Crockford, Browns Farm, Marlborough, Wilts Tel: 01672 515129**

## LPG runs out of gas

LPG looks like becoming one of those government side shows designed to fool some of the people some of the time. In 2000 Labour deputy John Prescott announced they were backing the new fuel because of its environmental benefits. He converted one of his Jags, offered grants to encourage people to change, and promised a continuation of the reduced taxation. Today the news is that LPG tax will increase from the 5.4p/l it is today to nearly 8p in September - this compares with the the 47.1p/l duty on petrol and diesel. Conversion grants will be cut from £1,000 to £700 a vehicle. The reason is that LPG has been overtaken for clean emissions by other vehicles, particularly the petrol-electric vehicles from Toyota (the Prius, which we have featured) and the Honda Insight.

The amount of driving you do before paying off the conversion costs and starting to save money is increasing, and will continue to increase as the LPG duty rises - the chancellor has said it will be cut by 1p/l a year. Motor economists calculate the break-even is presently 16,500 miles. Cars use more LPG than petrol, so a petrol car doing 30mpg would use 15.15 litres costing £12.00 while the same car would need 17.5 litres of LPG costing £7.12.

The story looks like some back peddling by ministers, who perhaps are now less prepared to subsidise LPG users to the tune of £60m a year. Modern car engines have improved so far so quickly they have outpaced the gas technology in the environment stakes. With CO2 emissions the best LPG car, the Vauxhall Astra LPG, produces 151 g/km. The Honda Insight does 80, the Prius 104 and Citroen C2 and C3 1.5 diesels around 110.

## Ten tips for trouble-free hydraulics

### Don't let hydraulic pumps and motors start dry

Even experienced agricultural engineers do it - they fit an expensive replacement motor or pump to a machine without filling it with oil. When the machine is started the unit starts dry and instantly becomes worn. Prevent "infant mortality" by always filling the case with clean hydraulic fluid prior to start-up. If the unit is mounted in a vertical position and the case drain line is flexible, use this technique to fill the case:

- 1) Position the pump or motor horizontally (case drain port up) within reach of the case drain line.
- 2) Fill the unit with clean hydraulic fluid to the case drain port.
- 3) Connect the case drain line to the case drain port.
- 4) Mount the unit vertically.

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### Eliminate particles to reduce breakdowns...

Research has shown that maintaining fluid cleanliness at ISO 4406 14/11 will result in a tenfold gain in the average time between breakdowns when compared with a fluid cleanliness level of 22/19. This is based on the findings of a three-year study of 117 mobile and industrial hydraulic machines to determine the correlation between fluid cleanliness and breakdown frequency.

### Extend fluid life

Particle contamination reduces the service life of hydraulic fluid by stripping additives and promoting oxidation. Additives attach to particles, which are then removed by the filters or settle to the bottom of the reservoir. Wear metal caused by particle abrasion is a catalyst for fluid oxidation.

### The true cost of oil leaks

Where fluid leaks out, contamination gets in. It costs ten times more to extract contaminants from hydraulic fluid than it does to exclude them. So fixing hydraulic leaks as soon as they are noticed not only minimises the costs of the replacement fluid as well as those of cleaning up the mess, it also saves the hidden cost of removing the contaminants which have been sucked into the system.

### Prevent the reservoir inhaling dust and moisture

The changing level of fluid in the reservoir means air is continually being sucked into the system and then blown out. This air can carry contaminants, which mix directly with the hydraulic fluid. Nearly all filler-cap breathers fitted to hydraulic reservoirs are not effective in preventing these contaminants entering the system. The air should be adequately filtered. In damp environments desiccant breathers are essential to prevent moisture getting in. Adding an additional filter, and changing or cleaning the filters which are fitted, is an important maintenance job which is often over looked. It costs much less to exclude contamination than it does to extract it.

### Always clean couplings

Dirt inside female and on the end of male connectors is washed into the oil. Wiping with a rag so grit and moisture is removed is not being paranoid, just sensible. If female ends are dirty they can usefully be cleaned with solvent and compressed air.

### Keep ram pistons straight.

When you're repairing hydraulic rams, remember to check the piston for straightness. Bent pistons distort seals and cause premature wear. Checking the piston is true, and straightening any curve with the workshop press is time well spent.

### Inspect and protect hoses.

Hydraulic hose manufacturers estimate that 80% of hose failure is due to the hose being pulled, twisted or kinked. Inspect the hose for wear on the outside. Replace hoses as soon as you see signs of wear so as to prevent failure. Use polyethylene spiral wrap to protect hoses from abrasion. See Practical Farm Ideas Summer 2003, Vol 12 #2

### Prevent hydraulic rams becoming the source of contamination

Maintain ram rods and wiper seals in good condition. Worn or damaged wipers and pitted or gouged rods allow dust and other contaminants an easy path into the system. Fitting rod

protectors (bellows) to cylinders operating in abrasive or corrosive environments can extend rod and wiper seal life. Bellows are an extra barrier for contaminants.

**Filter oil rather than throwing it away**

Water or particle contamination rarely necessitates an oil change - unless the contamination has resulted in additive depletion or base oil degradation. These contaminants can be removed from hydraulic fluid by filtration. Drain the reservoir and filter the oil through the finest material you can find, so it just weeps through. Throwing expensive hydraulic oil away can often be a waste.

**Training qualifications in farming**

Farming is no longer a job you learn on the job, 'sitting by Nellie'. Government wants to farmers to be trained to perform tasks to a recognised standard. It is hoped the result will be higher productivity, less waste and fewer accidents, and expected or hoped that farm staff will be better motivated, and farm customers more satisfied.

This policy has been implemented in a hotch-potch manner, making it really extremely difficult for those in the industry to follow. Regulations and standards are issued on a piecemeal basis, each with its own requirements. Some are mandatory, others are advisory. Some require you to work professionally, others just require you to be qualified. Additional and advanced qualifications (such as those compared to the advanced driving test) are available, and the hope is those holding them will command higher fees.

Training is increasing being linked to legislation. The Health and Safety at Work Act 1974 and the Management of Health and Safety Regulations 1999 place duties on employers and the self-employed. The Provision and Use of Work Equipment Regulations 1998 (PUWER) place specific duties on them to ensure that those who use or supervise the use of equipment and machinery has had adequate training. There are a growing number of specific jobs which are covered by regulations. They make formal training effectively compulsory for users, whether employed or self employed.

**Pesticides.** The Control of Pesticides Regulations 1986 (COPR) require sprayers to have relevant training and competence, and those born after 31 Dec 1964 or spray contractors need a Certificate of Competence unless they are working under the direct supervision of someone with the certificate. Older workers also need to show competence and training.

**Lift trucks.** The Construction Plant Competence Scheme (CPCS) provides the certificate needed to operate lift trucks. The Code of Practice is laid down by the Health and Safety Commission (not the HSE).

**Chainsaws.** Competence for professional chainsaw operators is judged by independent assessment, leading to the award of an accredited NPTC Certificate of Competence, and this is also a common requirement in contracts of service. Those working outside forestry can attend an Integrated Training and Assessment course leading to a Certificate of Basic Training from Lantra, and this will be recognised as

meeting the requirements of PUWER.

Chippers, Stump grinders, Elevated Work Platforms, Brushcutters are also covered by PUWER which calls for adequate training both for employees and self employed.

**Abrasive Wheels.** These are also covered by PUWER. Tractors, ATVs and 4 x 4s. covered by PUWER and so require employers to provide adequate training in their safe use, including towed equipment and attachments.

**Manual Handling.** The Manual Handling Regulations 1992 requires employers identify and avoid risk of injury from manual handling.

**Vermin control.** Governed by the Control of Substances Hazardous to Health Regulations 1999 (COSHH) and the Food and Environment Protection Act 1985 (FEPA).

The topics above are all covered by a programme of Integrated training and Assessment, which awards a Certificate of Basic Training and also a nationally recognised Skills ID card.

Further qualifications are available for pesticide and fork lift truck operations, and these involve further training, logged working practice and assessment.

Lantra Awards is one of a number of agencies providing the training and assessment, and Lantra, an Investor in People organisation, traces its involvement in the land based sector back some 30 years to its Agricultural Training Board

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work in the construction industry. You must hold a valid licence for three years. You must pass a written test and a practical touch screen test and also to have achieved the Intermediate construction Award. they must then complete the NVQ within three years while getting experience using plant on sites. NVQs have a compulsory level 1 and then a specialised Level 2 where the candidate can select from a number of practical options.

This short summary illustrates the complexity of farm training schemes. Numerous organisations, boards, panels and awarding bodies are involved. There are so many of these it is difficult for someone outside the training industry to grasp their functions and inter-action. Many people inside the industry have similar problems.

Farmers need to discover which training certificates are essential, and which are advisable. The spread of activity is increasing, and Drystone Walling is one of quite probably a number of additional areas covered by the scheme. The certificate is voluntary but provides those doing this work with a recognition of their skills and a framework for those learning and joining the industry.

Courses for all these activities have a cost to employer or employee, and so farmers and workers need to select the areas of the industry they need to gain qualifications in. The era of the General Farm worker appears to be on the wane, as people in the industry become more specialised, and are also precluded from certain tasks and work through a lack of certificates and qualifications.

**Followup: Lantra Awards, Lantra House, Stoneleigh Park, Coventry Warks CV8 2LG Tel: 024 7641 9703 [www.lantra.co.uk/awards](http://www.lantra.co.uk/awards)**

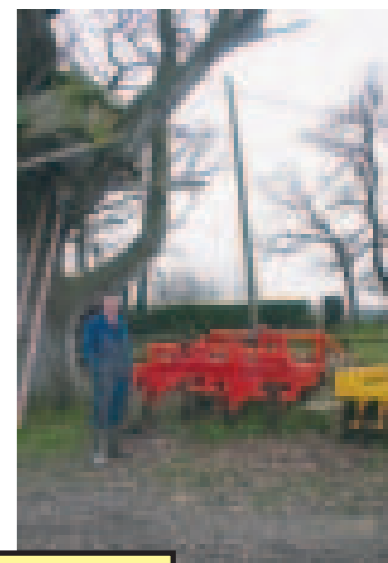
**HIGH SPEED NON-INVERSION FASTRAC SEEDBEDS CUT COSTS AND MAINTAIN GOOD YIELDS**

- 3M MACHINERY TRAVELS QUICKLY BETWEEN FIELDS
- HIGH SPEED BREAKS DOWN CLODS
- SURFACE TRASH IMPROVES STRUCTURE

Simon Walter leaves his plough in the shed, and works his heavy ground at high speed. His 260 ha all arable farm now grows only combinable crops, although onions, roots and other crops have been grown in the past. As the price of these 'exotics' has declined and buyer demands increased, so their acreage decreased and in the last few seasons he decided against continuing their production.

Non-inversion has allowed a friable surface to develop on his soils, and organic matter and worm populations have been on the increase, as have wheat yields, with most fields now averaging 4.5 - 5 tonnes. The ground produces large quantities of straw which challenges many commercial cultivators.

A primary feature of Simon's machines is their ability to deal with large quantities of trash. The second feature is their strength. Front line tractors are two Fastracs, a 3155 and 3170. Hayling Island has relatively small fields and narrow lanes, and is a picturesque place where visitors and tourism are important. So wide machinery must be carried on low loading trailers. But the small fields mean loading and unloading can count for a disproportionate amount of working time, which means there are many advantages in having a machine ready to go.



**Cultivator uses Shakerator legs**

Towing this 3m cultivator at twice the normal working speed gives it a work rate of something close to a 6m machine working at a more pedestrian speed. Driving at speed is quite feasible with the Fastrac, as Simon finds the suspension on both axles and also the cab provide a ride which is impossible in a tractor with unsprung axles. The machine works 1.5 - 2 ha/hr, and cultivates to a depth of 9ins.

Seven heavy tines break up the ground and these are followed by a double packer roller. The depth is controlled by the setting on the tractor top link and the three turn buckles on the rear packer. Get these settings right and the machine maintains a constant working depth. The close coupled rollers are self cleaning, so it works in less than perfect conditions.

The cultivator uses Shakerator tines with feet not fitted with wings. Simon likes these tines. They're lighter than real subsoiler tines such as the Spaldings Flat Lift, yet are heavier and more aggressive than regular cultivator tines. The machine breaks the top 9ins of the heavy ground

into clods which are then cracked and broken by the packer. Straw and trash is spread and mixed. The ground is left broken to ploughing depth, the surface uniform and level. The slimmer Shakerator tines don't leave a void in the soil.

The machine is built around a heavy cross bar made from a length of 10in box section with 12mm walls. This is located in the centre of the machine, and carries a tine bar in front and another behind it. The mounting bar for the tines is in line with the lower links, providing a direct pull. The bracing is immense.

The headstock frame is square and has angled braces stretching to the either end of the main cross piece.

Getting the packer placed correctly is important if the machine is going to work at its best. The packer frame is mounted on a pair of regular pins set on the main frame. Two turn buckles link the frame and these helped by a single one in the centre set at a different angle. The result is a rigid mounting which sets the working depth of the tines.

Above from left: the main cross beam tells you the strength of this machine; packer end of the flexible link which attaches its frame to the cultivator. It means the angles can be set so the two sections can be lined up correctly to work at a wide range of depths; packer frame has lower hinges mounted on the rear tine mounting box section and the main uprights. The machine gets adapted and strengthened as weaknesses show.



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Clockwise from right: 3m cultivator has independent-ly angled scolloped discs on a heavy frame, and an interlinked packer roller to follow; the levelling box turns on a nut passing into the frame, and so each leg is rotated the same angle all together; the packer height is altered on three vertical mounting bars which are drilled so it can be fixed - or left to float; big discs need big spanners. Each disc is secured between two large nuts; detail of leg attachment brackets



Disc packer mixes straw, levels field surface

- 3 bearing design long lasting
- heavy section for fast speeds

These heavy discs prepare the soil surface for a single pass with the cultivator before drilling. Disc angles are adjusted by rotating the legs. The axles on each leg are home designed and built using the workshop lathe. Each leg is fitted with three bearings instead of the two which are used by most manufacturers using this system. Simon realised that premature bearing failure is caused because the disc exerts a thrust down the axle as well as a turning motion. Most makes build their legs with two bearings, and these are expected to absorb this longitudinal thrust. Some of them don't for very long. When speeds are high the force is increased. The disc axle is mounted in a tube which is filled with an internal flange

which absorbs this thrust using a third bearing. A void in the centre is filled with grease using a nipple and grease channel drilled through the outer and inner tubes.

Designing this long lasting axle system was just a part of the work involved in getting this machine from paper to field. Each leg needs to be rigidly attached to the frame, yet able to swivel. This is done using the levelling box from a tractor link arm which turns a screw connected to the coupling connecting each disc.

The discs are followed by a set of interlinked packer rollers which break up any clods before they have time to dry and become impossible to handle. The roller height can be adjusted, so a variable weight can be applied to the discs depending on ground conditions. The drier and harder it is the greater the weight needed on the discs.

Below: the previous home made disc looks more like some of the products seen at Smithfield. Long and heavy, it's a slower speed machine which is difficult to manoeuvre which can't utilise the stubble speed of the Fastrac adequately. A real piece of heavy engineering though which did many season's service.

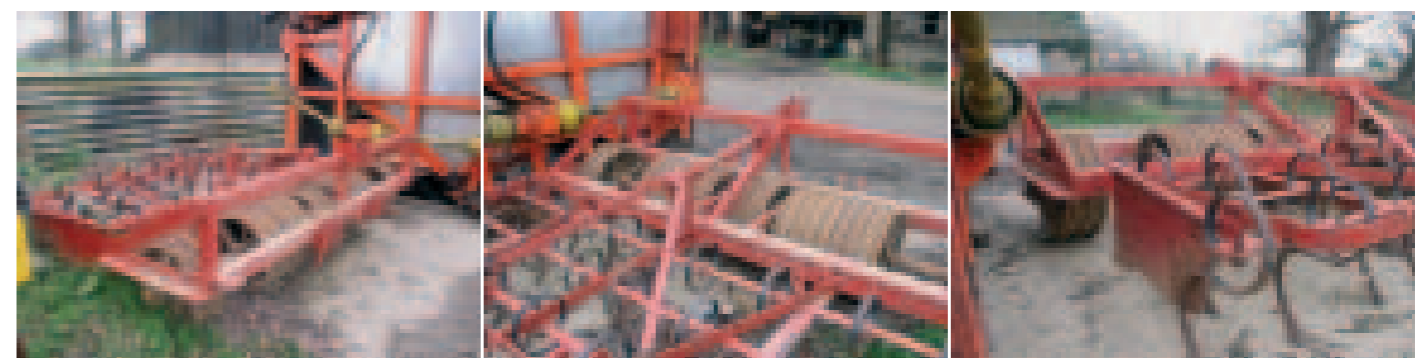


Below from left: a selection of mounting positions allow for different soil and drilling circumstances, and also tractors. The top link adjusts the angle of the two sections of the machine; the cultivator rides on hinges with two alternative positions which allow for different positions of working depth. Two support the side board on the front sight line; side board cleverly has a single tine fitted outside it, reducing the typical spring tine ridging to nothing, and making a seamless join between bouts.

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**Cultivator finishes the seedbed**  
 This 3m cultivator mounts on the front linkage of the drill tractor, and provides the finishing touch to a top quality seedbed. It's brilliant in sorting out cloddy seedbeds, the tines lifting the clods to the surface. The machine is fitted with the bracing necessary to take the punishment.

speeds are unchanged. The wheel gaps mean the soil surface is as uniform as can be before connecting with the seed drill. The frame is lighter than Simon's other cultivating machines, but this is travelling at normal drill speeds. Side boards are fitted to stop the tines creating their typical of soil at the edge of the work. The boards keep the action in the width of the machine. The machine is fitted with the bracing necessary to take the punishment.



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Right: drive motor is out of harm's way here, and the head is slightly less wide as well. Far right: solid guarding, and a deflector to eliminate a sharp edge, makes the head end pretty well protected against damage.



#### Hedge trimmer gets needed modification

- re-sited motor won't get damaged
- simple modification for any ag engineer

Here's a simple improvement for all owners of Bomford B467s and other trimmers with their rotor motors mounted directly onto the shaft. If you haven't damaged the rotor motor or its mounting so far, there's a good chance you, or your tractor driver, will in the future.

The end mountings are a particular problem when using the trimmer on the ground, or when trashing ditches. The head need to be close to the ground, and it's difficult to see if there's anything in the way. Hit it too hard and the mounting bends or motor breaks.

Simon whipped the motor off the shaft and fitted a double pulley instead. He then made motor mountings behind the head so the same hydraulic motor fitted on them, and put a double pulley on the motor shaft. The motor position can be moved to put tension on the belts.

The pipes need to be swapped around so the rotor is driven in the same direction. The belts drive the rotor without trouble and don't slip or wear unduly quickly. The motor is out of harm's way and head is marginally narrower. With a decent solid guard on the end to protect the pulleys, the head can be knocked against stones, earth banks and other obstacles without danger of damaging expensive parts.



Above, from left: storage for 90,000 litres of N; the mixing tank makes 14,000 litres at a time. Note the steel barrel which forms a quality protective cover for the motor and pump, with the end cut out so the motor can draw in cooling air; old burnt-out motor with an expensive flange is now driven by a run-of-the-mill model coupled on the back end - a good way to re-power.

#### Liquid N plant uses urea and distressed material and how to save money when replacing a special electric motor

- worthwhile fertiliser savings
- straightforward system

Mix urea with water by pumping it around in a tank and after a while the liquid you get is liquid N fertiliser which can be applied with the crop sprayer. American farmers are more than familiar with the technique. Spraying nitrogen means accurate application. Liquid N is very readily available to the plant.

Simon will buy distressed urea and other nitrogenous fertiliser to use in is liquid plant, if it's available, but if he has to buy product at the full price he's still a happy man. The cost per unit is a fraction of Ammonium Nitrate. His plant makes batches of 14,000 litres and each

batch takes 24 hours. He stores the liquid in a 90,000 litre tank, and the material is stable and stores for a long period of time.

#### Cheap motor drives bunt out shaft

The pump is driven by an electric motor - one of those motors made with a special flange connecting directly to the pump. The replacement was expensive, so he took the burnt windings out of the old motor (to prevent any electromagnetic drag) and removed the cooling fan. He then fitted a new, bigger but far cheaper motor with a standard shaft drive on the end, using a rubber coupling to make the connection. The result is good.

You won't be able to replace every special motor this way, but the idea is worth remembering - for pressure washers and other machines bolted directly on the end of a motor.

## IT'S YOUR CHOICE... NEW OR USED?

We all know second hand is not always cheapest, but buying new can often be an extravagance. The new or used decision is one which has to be made quite frequently on many farms.

Buying farm assets, be it machinery, land or buildings in haste is no better than going into marriage in the same state of mind. You repent at leisure. There's a real need to assemble facts before starting the process. What you want, why you need it, and its value to you in terms of asset value, operational benefits and so on; they all need to be considered and calculated. Do this with some care and the chances are the whims will be eliminated.

It's clearly important to buy the items involving major expenditure correctly. There's a real need for information on which to base a really sound and considered decision - but it rarely is enough. The two major determinants are:

1. what you're buying
2. who you are

The design and function of different farm machines develop at very varying rates. A trailer made ten years old is little different to one made today. If you're looking for a flat roll, the new machine is almost, if not totally, identical to the one available 30 years ago. Look for a steerage hoe, for example, and you'd think the same might be true. But there's been a major technical breakthrough, with the self steering Garford machine, as shown at last year's Royal Show, being capable of working at some three times the speed of the conventional. If you have a decent area of beet or other crops to hoe, who would buy the old technology?

The 'who you are' is also important - not in respect of being a serf or a lord, but your own personality and inclination. Are you happy to take a reasonable risk? Can you accept something which may need attention and be con-

fident any problems can be solved? Is the number plate important? Every farmer has different circumstances, cash flows, business plans.

Your business plan is a part of who you are. Who, for example, wants to be farmer selling a 2 year old Simba Miniflow min-till drill which has been used for just 220 acres? Or a 1999 MF 4220 with 98 hours on it, or even a four year old wood shredder with 211 hours? Some machines like these with very low hours will have been bought as tax breaks, but others are purchases made without doing the necessary thinking.

The 'who you are' includes the scale of the work involved. Many small scale farmers in today's terms, with perhaps 200 acres of cereals, use combines and other machines which are more than 20 years old, bought second hand for small money and used and maintained to continue performing adequately over that acreage season after season. The savings they make over employing outside contractors often pays for the machine in a season and a half. The machines are simple to maintain, parts are frequently available, and they look like going on for ever.

The 'what you're buying' is equally, if not more, critical. Is it a front line machine with a heavy regular work load? Can a substitute be found easily? Will a breakdown be a disaster or just a hiccup in financial terms? What is the value of reliability? Would the fuel savings of a new machine reduce annual operating costs significantly?

A support machine can be as critical as a star player. Farm operations involving a series of machines are done at the pace of the slowest in the chain.

A silage contractor arrives with a 80 acre a day harvester and three ten ton trailers, but the farmer insists on doing the buck raking with an 80 horse tractor and rear buckrake, so the day's work is 50 acres of stop-start.

#### Researching the facts

Picking people's brains, and then interpreting what they tell you is important in reaching the right buying decision. Many people with advice to give have an agenda different to your own, and this needs to be recognised. It's pretty easy if you are talking to a dealer or salesman. It is less simple when the advice is coming from another farmer or contractor. He may be a man who never admits to a mistake and claims 100% knowledge, someone who sees it to be of paramount importance that you are persuaded to his way of thinking. He has chosen a Laverda combine and is determined you should do the same.

You get advice from published articles, yet here again the agenda is never clearly spelt out. Is there a commercial connection? Is the article the pay-back for an expenses paid trip or other freebie? Information on the internet is independent - but is it? Is the review you found on Google part off a subtle PR exercise?

Despite the difficulties, there's nothing like advice, from whoever. People can give you a slant on a decision by simply asking the right question, or putting an obvious point in a way which makes the conclusion stand out.

#### The costs of ownership

Clearly, this is a major factor to consider. Ownership costs include:

FOLLOWUP: SIMON WALTER, MANOR FARM, HAYLING ISLAND, PORTSMOUTH, HANTS

1. The interest on the capital required or, if self funded, the interest forgone by the purchase.
  2. Annual depreciation and estimated replacement costs
  3. Running costs - not just diesel, but the cost of drivers, maintenance and repairs - taxes (road tax for trucks and other vehicles, property taxes such as rates).
  4. Insurance
  5. Knock-on costs - such as the need for more storage, livestock housing, transport and so on.
- Putting figures, if only educated guesses, by these figures is necessary to build the new machine into the plan or budget. You don't want to shock the system, particularly not with today's farming economics.

**Long-held assumptions about farm machinery**

Here are some basic assumptions:

- A. New machines are more reliable than used ones, do more work and last longer.
- B. Used machines are cheaper, break down more frequently, don't last as long and do a poorer job.
- C. Home built and modified machines require a mountain of workshop time not just to construct them in the first place but also to keep running.
- D. 0% finance for 12 months means you don't pay for it over that period.
- E. "Nothing to pay for two years" gives you a free machine.
- F. A high trade-in value for your old machine means you're skinning the dealer.
- G. Spend as much as you like on machinery when interested.

In practice we find the Choice of machinery:

Buying new should give you the chance to get exactly what you want. But how many people find themselves having to accept the model and machine the dealer has in stock, as the one they want 'is nowhere to be found'.

New machinery costs:  
Buying new requires greater capital, incurs greater depreciation and higher insurance. But the running costs will be lower, with better performance,

lower fuel costs and hopefully no repair costs for some time.

In practice we often hear of new machinery having amazing 'teething troubles' instead of breakdowns, but they are still events which mean the job is on stop.

New machine reliability:

New farm machinery is manufactured under a different set of rules to domestic appliances, and even some motor cars, both of which these days are generally amazingly reliable and trouble-free. These products have seemingly been designed and tested to the limits before being put in the show room. The reason? Reputation. A bad washing machine would be a disaster for Bosch, Indesit or Hotpoint, as their product is sold through relatively few, very powerful retailers. Farm machinery manufacturers work in a different world. They sell through hundreds of dealers, some who they own or control. Independent product testing is infrequent and not freely available. Users are accustomed to things going wrong, have few channels of complaint. Some farmers say manufacturers sometimes rely on their customers to do the product testing for them.

New machinery design:

New farm machinery is made with the aid of designers and CAD systems, so curves of moulded plastic and tin, finished off with stylish vinyl decals reinforce your belief the machine has been designed and tested down to the last bolt. But what if the curves and the decals were the first item them put on the design screen, and the machine was created to fit inside this ultimate

mined to make kit work the same way as mobile phones - it's all pressing buttons and selecting menus" and he's right - for tractors, combines and other complex machines at any rate. If the user understands the intricacies of a mobile phone, he may be able to get the best from the harvester. If he's a bit older, or trained on manually adjusted machines, has difficulty in reading small screens, a new machine can be harder than the older one to work properly. On the other hand, the new machine probably has the potential for better quality, faster work, if operated correctly.

New machine serviceability:

Like other products, new farm machinery appears sometimes to be made to have a definite life span, with parts programmed to wear out or fall apart all at the same time - a wonderful incentive to replace. It has components which you can't repair, and can only replace at substantial cost. If it can incorporate an electronic control system, it will. Cables and hoses can be replaced, sealed gizmos with two dozen different coloured wires poking out of them can't.

New machinery insurance costs:

Here's something easy to ignore until the decision has been taken and the machine needs cover. Pay £30/thou on the first £3k and £12 thereafter and the annual insurance bill on a £40k John Deere 6420 autopowr, and the annual bill is nearly £600. Double the premium for a combine or self propelled forager. For the tractor or harvester which spends most of the year in the shed, insurance can account for a chunk of

costs.

Dealer service:

get is only equal to which they can get parts. Most modern repairs are done by fitters and not engineers, and a fitter needs something to fit. New machinery needs parts back-up, ideally at local and essentially at national level. There's no service if the nearest module or modem is in Mannheim and it's a Friday afternoon. Neither if the part is only in Winnipeg or Auckland. You'll probably get a part for a 60 year old vintage machine more easily, and

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certainly there'll be somebody who can make you one over the weekend! Poor part availability can knock work rates for six.

Used machinery reliability:

We often hear of well maintained older kit working season after season without a hiccup. Performance remains modest, but its output matches the other machines being used - raising output would be a major investment.

Used machine usability:

Functions and controls which older farm hands are familiar are not such a drag on progress. Manual controls can be quicker to adjust than electronic ones which fail to get themselves in the necessary settings. Older drivers may well refuse to get in the cab of an expensive machine they don't know how to drive. Younger drivers may not be available. Sophisticated controls are only as good as the operator using them.

Used machinery capital costs:

Do make sure you know the lowest new price before buying second hand. We've all been to sales where used machinery made more than the new price. There's no 0% finance or payment holidays when buying used, and mostly no delivery either, so both of these need taking into account before you buy. Part exchange deals are often less attractive as well, if you're chopping in the old machine. Older well depreciated machinery provides major savings over new in terms of capital requirements.

Used machinery street-cred:

Faded paintwork, dented fenders and rusty wheel rims on a number plate which clage has little street cred matter? If you're in the business, it certainly can do, and can come with a cost. Even if your farmer customers understand the 20 year old tractor does as good a job as any on the baler, your horsey top paying customers may not. Something new and shiny is what they want to see. It's not just the horsey set. A sports field contractor described the need for 'flash' when doing jobs on school and county playing fields, let alone premier division

football pitches. Customers all wanted something bright and shiny, and preferably red. The lettering and logos were significant because it gave them confidence - they'd got professionals in.

Used machinery insurance

You might think this would be a reasonable saving, but the reality is different. While the new £40,000 John Deere will cost £620 to insure comprehensively for a year (includes cover for implements and attachments), a used machine of half the value still costs nearly £400, and one worth £10,000 nearly £300.

Used tackle to replace contractors

As contracting charges rise in line with the contractor's costs of machinery and labour, so farmers need look again at the pros and cons of doing their own work. Many will be looking at used, perhaps out of date, equipment. While the contracting costs which they intend to replace are easy to find, the costs of tooling up and doing the work on the farm are sometimes less easy to quantify. There are management risks and worry in addition to the standing and running costs of the machinery needed. Will you be able to get it all to work? What's the chances of an unmitigated disaster with major consequences of finding someone to come and rescue the harvest at the last minute? Yet doing the work on farm can have added bonuses as well. You can pick and use the really good weather windows, rather than accept the ones in the contractor's schedule. These can lead to better harvesting conditions - drier grain, better quality silage (which in turn has the knock-on benefit of better milk produc-

tion - and he's probably left a portion of it on the metal inside!

Taking the hiring option

Most people instinctively want to possess everything they need for their business - unless they are in building and construction, where owning equipment would be considered profligate and a real waste of money. Hiring farm machinery is becoming an accepted alternative to ownership. Dealers are getting into hiring as a means of maintaining turnover. It's an option worth exploring.

**Conclusion**

There are successful farmers who buy nearly all their equipment new; and equally successful ones who will always go for machines which have been used. Most buy some new, some used, some from sales and some from the dealer.

We apply the same logic to farm machinery as we do to buying cars and vans. If we feel wealthy and bullish, we'll go out and buy new. If things look a bit tight we try and find a bargain. Farm kit and cars may both be metal, but that's all they have in common.

For a start, the car is easily and instantly replaceable. There are thousands for sale and for hire at any one time. Cars are generally easy to fix. Parts for popular models are mostly available. Breakdown insurance is inexpensive and effective.

Farm machinery breaks down when other farmers and contractors are doing the same job, so spare machines are hard to find. The work the machine is required to do is time sensitive - limited by weather windows, crop maturity, grant payments and so on. It's a dilemma which is never easy to solve. Applying the logic outlined here will help solve this, and improve the chances of the your decision being the right one.

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# GET IT SEEN TO!

Even though doctors are suggesting patients should delay receiving medication, farmers shouldn't delay getting symptoms seen to. They've probably left it too long anyway!

Farmers are notorious for being the patients doctors never see. Farmers arrive at surgery with conditions which should have been treated months or even years earlier. They ignore medical problems and hope they go away.

So should they now heed the latest advice from the doctor - which is to let nature do the healing, because it often works as well as medication? The British Medical Journal has recently advised patients and doctors to give diseases the chance to go away on their own accord, rather than be stamped on by drugs. The BMJ says the best treatment for illness is frequently no treatment at all.

It's advice many farm families should ignore. The health service in Derby has discerned that farmers neglect their doctors, they have

clinic in Bakewell cattle mart so farmers can pop in when they're waiting to sell their sheep and cattle.

The physiotherapist at the High Peak and Dales Primary Care Trust has found that farmers suffer greater health problems than miners, with back, hip and knee problems being very common. Skin cancers which have been ignored are another frequent problem, as are hernias and other problems.

In the country as a whole the BMJ is concerned that mounting health scares have increased people's worries - headaches are meningitis, lumps are cancer, diarrhoea is IBS, memory loss Alzheimers. So they get the problem checked out asap. Employers are forced to accept their time off at the surgery. Getting to the doctor early has become a responsibility adults and parents have been told they owe their families - letting things take their course is considered foolhardy.

As the numbers in surgery increase so the time available to assess and diagnose

each patient is reduced. The doctor has the task of sorting patients into those who need instant attention, those who can probably wait for developments and those who are likely to get better of their own accord. For the doctor, there's a big problem, for if they get it wrong, patients increasingly seek retribution and compensation.

## "Am I really ill"

The new BMJ Best Treatments publication has drawn on the experience of a wide range of doctors and others in the medical world. Editor Luisa Dillner says "The big myth about medicine is that the professionals know what works. People don't realise that when

doctors know exists about their work - but patients don't."

Going to the doctor is an important part of many people's lives. If they are feeling under the weather, attending surgery and having the doctor listen to the problems and symptoms and hearing the doctor say, 'Yes, you are ill', validates the fact there is a problem, and one which deserves the attention of a professional. The consultation is also the patient's first step on the road to recovery - they hope to see this as the start of a medical programme which analyses and treats the symptom.

## Self healing can be quick

Half the antibiotics used in Britain are prescribed for respiratory tract infections, in children, adults and the elderly. Each patient has a different ability to shake off the infection, and each infection has a varying level of severity. Some, such as those in the elderly or the frail infant, need quick treatment as they are a real danger to health.

Last November doctors practices in South East England tried a system of post-dated prescriptions. Patients were told they could get their drugs only two days after the consultation. Researchers at Guys and St Thomas' medical school in London found that, of the 256 patients given deferred prescriptions, almost half never collected the drugs. They got better in those 48 hours, or at any event, recovered sufficiently not to need to take them. The survey produced an even more interesting finding. Nearly 90 per cent of those prescribed said they would choose to receive a deferred prescription again. Deferred prescriptions score as they don't send the patient away as a possible

alingerer, but presence of the problem time, give the expert it sometimes properties.

The BMJ editor says it is difficult now for people to understand that their bodies can control and cure themselves. "Patients have a tremendous faith in the power of doctors and the drugs they prescribe, and see side effects and long term problems as trivial." Her view is backed by work on placebos done in the UK and the USA. We find a surprisingly high number of people responding positively to pills which have no health inducing ingredients. This happens not only in the areas of anti-depression drugs - where one might expect a higher than normal response - but also for drugs for bacterial infections".

If delay tactics become the latest health mantra, farmers must remember it doesn't not apply to them. When they think they're ill, they're ill. When they get to the surgery, either by appointment (far the best way) or from the waiting room, they'll be well looked after, even though there's every chance it is their first meeting with their doctor!

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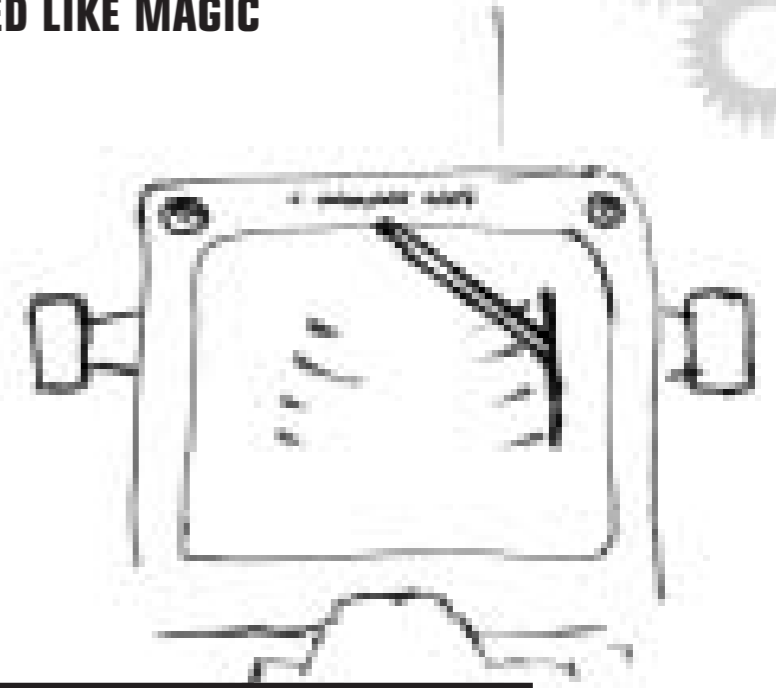
## WINDSCREEN SCRATCHES REMOVED LIKE MAGIC

- **SCRATCHES OBLITERATED**
- **COST IS PENCE**
- **PASS MOT**
- **NO DAZZLE**

If your windscreen is scratched there's an alternative to replacing it. It's far easier and cheaper than claiming on insurance and paying the £50 excess - that's assuming the screen is insured in the first place.

Jeweller's rouge is a very fine dust which mixes into a paste will polish out the scratches in about 10 minutes of work. Mix the dust with a drop or two of water and work it with an ordinary rubber or something similarly smooth which won't scratch. Get the rouge from the local jewellers, or buy it from suppliers or on the internet - £20 of it is enough to fix more than 100 windscreens.

It's a simple way to restore screens so they pass MOT tests, makes a tractor, combine or other harvester more attractive for sale, and more relaxing to drive as



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## THE CURSE OF LOOSE WHEEL STUDS

Here's the evidence to show why wheel nuts must be tight. The driver was lucky. It could as easily have been the off-side wheel falling in front of fast moving traffic coming the other way, pulling the tractor to the right rather than the left. The load could have been a heavy laden trailer which would have pushed the tractor further. The wheel could as easily have fallen off on a slope, resulting in a roll, rather than on a level road. All in all, someone up there was looking after this driver!

Never assume your nuts will stay tight. It can be years before they start to move. Once one has started, the others follow. They allow the wheel to move by no more than a thou or so, and when it does, the stud hole in the wheel is made a little larger - which allows greater movement and loosens the studs further.



The wheel only becomes 'loose' towards the end. Before that, all movement is parallel to the rim and hub. The wheel won't wobble, or feel loose when you're driving.

### Prevention

Engineers will tell you there is one sure fire way of keeping nuts tight, and that's by using a spanner. For tractors and implements in constant use, there's no harm in obeying the instructions which are sometimes posted on the side of implements "Checks Nuts Weekly".

Tell-tales - the plastic indicators you see on lorry wheels, are a useful indicator, and provide an instant visual check. They cost pence and can save thousands of £s of damage. Why are they not fitted to new tractors and other vehicles? Because they are no substitute for the spanner. Nuts need to be torqued up regularly.

The reduced and easy maintenance schedules for today's machinery makes these jobs harder to remember. A generation ago many farmers spent Saturday morning greasing and servicing tractors and the implements in use at the time. Each tractor had 20+ grease nipples. Today's sealed bearings, and extended maintenance means you can do other things on a Saturday morning, like driving them! Wheel nuts get forgotten.





## RUBBLE SORTER GRADES INERT MATERIAL

Above: the sorted rubble consists of material from a wide variety of material - chalk from local sites, concrete from London and everywhere else.  
Below, from left: rubble sorter uses rail line to sift the material; the sorter is built with strength in mind, as can be seen from these close-ups.

Britain produces a vast quantity of rubble and waste stone. Building sites, road repairs and a thousand other works produce truck loads of material which contractors need to get rid of, legally and at least expense. Farmers can get licences for inert waste, get paid to accept it and then have the chance of utilising the stone to improve farm tracks, make foundations for yards, fill in areas.

One problem is that trucks are loaded with material which varies in size from large boulders to soil and dust. Sorting this roughly into sizes makes the rubble much easier to use. Large stone is used at the base of any project, well away from the surface. Medium stone can be laid on top, and then finer stuff on top of this.

stuff rolls down to the bottom. The sieve stays in the same place and the loader picks up the material and piles it in separately.

The science may not be exact, but the result is surprisingly good.

The bars are made of rail line and are set 4in apart. This spacing is awkward as bricks and similar sized stones get stuck in the bars and after a while have to be knocked out by hand with a sledge.

So Phil would make it slightly differently a second time. He would reduce the angle a fraction so the material rolled slightly slower, or else make the frame so the angle could be altered. This is not, however, a machine which lends itself to fine tuning. His other change would be to

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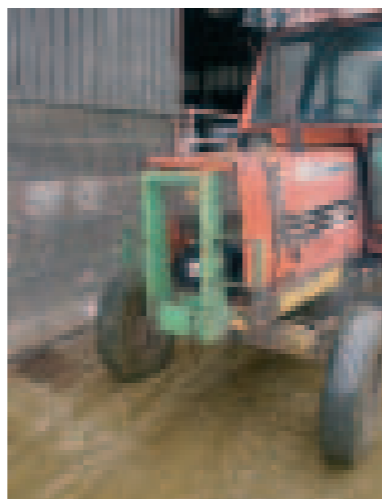
## SCRAPER TRACTOR GETS FRONT BUMPER

Why not protect the front end of the scraper tractor with a solid bumper. So when the lad on it decides to forget there is a girder in front while looking behind, the tractor will live to see another day.

These tractors get the roughest life of any farm machine. Not only is the oil changed on leap years only, it's lorry tyres on the front axle, and economy all round. Some may be false - the difficulty is finding out which!

Build something like the one in the picture, and you can adapt it to fit any tractor. It needs to protrude, must be attached with sufficient strength to use as a tow point. It needs to be made so you can get access to any parts, such as the air cleaner, which are located behind the grille and in front of the rad.

**Followup:** Phil Skinner Pilgrims Farm, Pilgrims Way, Titsey, Oxted, Surrey  
Tel: 01883 712770



## DRILL HAS A REST TO SUPPORT STEEL

- protects the drill bit
- prevents accidents
- adjusts for drill setting



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It's worth looking at the side of the work bench on it for support when

less chance of damaging the drilling tool, whether it be a standard twist drill or the Practool Superdrill in the chuck. The Practool Dyfrig uses drills holes up to 2in diameter (there are models which drill to 3ins), and in heavy material as well.

The frame has adjusting slots so the rest bar can be moved in line with the table on the drill itself. It's about 2ft away from the chuck, and this distance makes it effective for reasonably long lengths of steel, even if the hole being drilled is close to the end.

The stand frame is made from angle which is welded on to the drill stand. A diagonal brace adds necessary strength. The stand needs to be positioned so heavy gauge box section

from above. With the with one hand on the ing fluid on the work,

using the garden sprayer as in the picture.

Dyfrig finds himself using his Superdrill every week - to drill out bushes, make plates and other items. Its advantage (Practical Farm Ideas - 01994 240989 - is the UK representative of the Australian company which has been making it for the past 15 years) is that it expands the function of the small bench drill, and at the same time is adjustable so holes of any diameter within the range can be accurately and quickly made.

**Followup:** Dyfrig Williams, Tycanol, Pontfaen, Fishguard, Pembs Tel: 01348 881407

## TYRE REMOVER IMPROVES SAFETY AND GUARANTEES SUCCESS

Heavy walled steel and some good welding is needed to make this tyre remover which can save a farmer serious injury, as well as making a tough job possible



Using the sledge hammer to break the bead on tyres which are rusted fast to the their rims is a serious mistake. The reason is the hammer can bounce back from the tyre like a spring, and when it does it's going right in the direction of your head. People have actually been killed by the impact.

So you need more science, and less brute force. Dyfrig Williams made this breaker using heavy walled 40mm box and 10mm plate which he shaped with the grinder into a taper.

When inserting the breaker he has the two parts of the join in line and then uses the arm to secure the tool to the wheel rim. He then hits the wedge between the tyre and rim, tightening the the securing arm as he does. This prevents the tool

jumping out, and two positions to suit different rim profiles. When the wedge is secure, he turns to top bolt so the centre part moves down and forces the bead off the wheel rim. The wedge can then be pushed in further and the bead separated further.

Stubborn tyres may need the tool to be used a few times before the tyre is loose from the rim.

Dyfrig designed this to specifically suit agricultural tyres and wheels. Some farmers find it more economic to buy replacement tyres tubes and so on from suppliers and then have Dyfrig fit them for them. It enables them to make use of suppliers who have a patchy or non-existent fitting service.

- COST CUTTING WORKSHOP INNOVATIONS
- LOW COST FEEDING
- A MAJOR SLURRY INNOVATION
- LOW COST COW HOUSING

Experts predict another possible round of price reductions for hard pressed milk producers. For dairymen, it means further adjustments to their business. Less feed, lower costs, and marginally less milk as well.

Low milk prices require a careful analysis of costs. 'Feeding for yield' and 'getting the full genetic potential' are concepts which can produce losses. Getting the most from low cost feed means being

very careful with bought in feed, and matching stocking rates to forage production. Fulfilling quota and maximising potential are all management ideas which have little or no place when milk is sold for a fraction of the price of water.

This feature looks at a substantial dairy business which has been planned on minimal cost lines right from the start. Established dairy farmers may well read it open-mouthed.

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Today's 'model farm' is one which... The Harrison farming business is in... 'model farm'. Not that Neil would recognise it as such! For most farmers, the model farm is a money-no-object place, with buildings with a 300 year life span. With fine wrought iron work, brick work and hedging. Model farms were designed to demonstrate wealth as well as be efficient units.

The Harrison business in Surrey is centred on milk production, and they keep 900 cows in three herds and have 5 3/4m litres of quota. There are 400 cows at Pallinghurst Farm, 300 on another and 200 on a third close by. The business was started 50 years ago by Neil's father and his brothers, who moved from trading fish in Billingshurst market and started their dairy with 12 cows.

Eight Harrison families are supported by the business, which employs a further eight cowmen and three general workers. Family members have specific jobs and responsibilities, dependent on their skill, inclination and training. Human assets are used to the full, and there are jobs available in the business. All field work and harvesting is done, and the

and also some outside work.

Few assets remain unused. Yards and buildings are rented to local businesses, many being start-ups which are not in the position to take on purpose built factory units. Businesses which need storage space for their raw materials, such as stone cutting, fencing and timber and so on, have the room they need to operate. There's a mobile phone mast, which capitalises on the farm's location.

### Keeping it simple

All three herds are similarly managed. They are grazed as long as possible. They calve all the year round and are on self feed silage, and receive a flat rate of concentrates in the parlour. Maximising the present low price of milk in Britain requires the same approach as that in other low price countries, such as New Zealand. Cows are kept in good condition - sick or stressed animals are not contributors. Yet they are looked after as economically as possible.

Far left: there's liberal use made of reclaimed materials - hundreds of sleepers and many motorway sections - all put up before Practical Farm Ideas magazine was even thought about! Left: cows for AI go in these special stalls which lead from the cubicles on the 300 cow herd.



Above, from left: GEKA metal worker punches, bends, guillotines and nibbles; the welder rides on a swinging arm which gives quick access to all the front of the workshop; workshop layout has seriously heavy steel bench in the centre.

### The Workshop

This is Neil's kingdom, his interest and skill being honed at Ryecotewood College in Oxfordshire. The workshop has a pair of sheds, each 40 x 20 ft. The twin buildings provide space for more than one project being worked on at a time, and gives a good deal of storage space as well.

'Well equipped' is almost an understatement, as the shop has many machines only found in professional engineering shops. It includes:

1. A GEKA metalworking machine which punches holes, guillotines and presses and nibbles. 'The GEKA saves hours and hours of work,' says Neil, who bought it new for around £6,000.

2. A digital bending machine which handles tube up to 60mm diameter. This £10,000 machine was bought for a specific job - to bend all the parts needed to make a sequential bailing machine in a new herringbone milking parlour. The job required numerous accurate bends in pipe of 2ins diameter and less, and this machine is able to replicate each part exactly, so it all fitted together. The high cost of the machine was more than repaid by the one job. Since then it has been in use for much other work.

3. Plasma

can be cut well with the gas torch, thinner stuff has been a problem. So parts of trailer sides, feeders and numerous items are repaired with panels cut by plasma.

4. Much work is done on a solid steel workshop table with a top made from 20mm plate. It's too thick to bend, and so makes an ideal flat surface for construction work. The bench is strong enough to be used to straighten parts by pulling them down onto the surface. Jigs are welded to the surface and then ground off when finished, and a series of holes drilled in a curve are also sometimes useful when shaping parts. These holes were made by a previous owner in order to do a specific job.

5. Naturally, as much work as possible is done inside the sheds, and Neil has mounted a MIG welder on a swivelling rail fitted high on a side wall. The rail is 15 ft long and 11ft from the floor. The 2in diameter scaffold pipe flexes from the weight of the welder, particularly when it carries a new 15kg roll of wire. Yet it's too strong to buckle.

The equipment is sufficient for Neil to take on some quite exacting outside work, and also work

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From left: Halogen lights help winter management; rope lower rails eliminate cows getting stuck in cubicles, and the top rope stops them getting too far up the bed; beds are topped up with straw three times a week.



### Kennels provide cost-effective housing

This 400 cow kennel set-up has been in use for decades. The stalls have 4ft centres, the beds are straw and are topped up three times a week. The farm uses 400 tons of straw in the season. Timber kennels provide cows with healthy conditions, excellent ventilation yet heat is retained - beds are safe and

cows don't get stuck in them. The layout is based on rows of 25, giving 50 kennels to a section - cows can exit either end into wide passageways. Design is important to prevent queuing and slow movement.

The layout enables cows to be checked, as they are all visible from the centre aisles. The kennels are lit at night.





Clockwise from above: rubber drive wheel has small electric motor; looking glass from a dresser lets the milker on the outside check the milk is going down the pipe - added after a pipe seal let the best part of a milking go down the drain; the wash gantry is fixed directly above the centre point; the

centre point where the rotating pipes connect with their static extensions going into the dairy and motor house. Pipes carry vacuum, main milk and dump milk and electrical pulse connections; home made revolving gantry carries a hose line for washing down outside; parlour runs on 40 auto lubricated rollers which need precise positioning otherwise the main frame will bend. There are two drive rollers, on opposite sides.

**Rotary milks 400 in 90 minutes**

- fast milking but needs two to operate
- complex with many parts to wear out
- reliability and service paramount

The Dairymaster 60 point rotary has flat rate feeding and no ACRs. There is a main milk line and a dump line, and these are selected by the cowman as the cows enter. The parlour has 40 small wheels which run on a rail, and it takes 12 minutes for it to rotate. There are a pair of driving wheels located opposite each other.

The parlour has had a few problems since commissioning, mainly electronic and connected with the washing cycles and also the dump

people to operate it at all times. This is in contrast to the herringbones, which need two but which can be operated by a single person for some of the time.

Like all rotaries, it is technically complex. There are many moving parts. Glands in the centre stack will wear in time. The capital cost is high, and the building needed is quite large. Yet there is much in its favour. It does milk a lot of cows in a short space of time. The work is well structured - there's minimal walking and bending. The parlour is easy to clean, and herdsmen enjoy working it. The Dairymaster design is robust and not over technical, and Nick Harty, the senior Dairymaster engineer, is service good.

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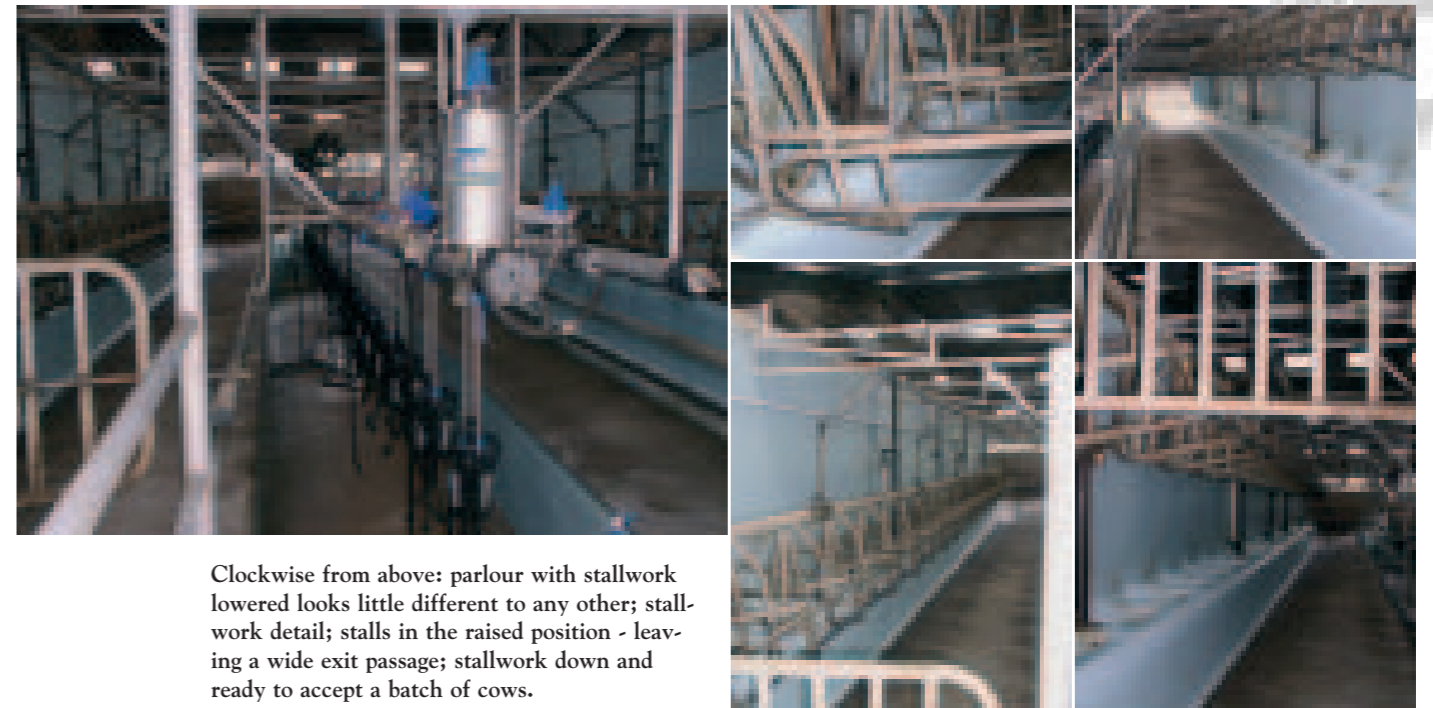


**loading platform**

Bedding down takes two people - one on the tractor and the other on the platform loading the chopper. Sections of Hesstons or D1000s are fed into the chopper - the bale standing on the platform. The machine is driven slowly down the cow passages, and the straw is not pulverised, but gets blown to the front of the bed so some gets eaten and the rest moves back.



Blower wagon is loaded from bunkers with 2x wheat; 2x rapeseed; 1x soyameal; + minerals (ration cost approx. £90/t), and is mixed in the process of loading.



Clockwise from above: parlour with stallwork lowered looks little different to any other; stallwork detail; stalls in the raised position - leaving a wide exit passage; stallwork down and ready to accept a batch of cows.

**Herringbone speed increased with sequential bailing**

- 300 cows in 2 hours
- single person can manage for some of the time
- uncomplicated with little to go wrong

The Harrison's tow other herds are milked conventionally. The larger of these is a 24:48 which takes 2 hours to milk 300 cows through it. The extra milking time over the rotary limits much expansion of this herd, but the herringbone has certain advantages.

Throughput has been significantly increased by fitting a sequential-bailing system, which Neil built in the workshop to the Dairymaster concept.

Sequential bailing achieves:

- \* faster
- \* faster

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manger open at a time. This means the passage is wide enough for the cows to file in two or three abreast. There's only one manger available at any time - hence the sequential bit. When a cow goes into the stall she automatically opens the adjoining manger. The cows go in quickly - click - click - click.

The stallwork was made in the workshop, using a profile bending machine (nearly £10,000) bought specially for the job. The whole side is raised and lowered with six rams working off compressed air - no chance of contamination, odour etc. When he first made it the stalls failed to work reliably. They rely on gravity and the angle of the hinge to close, and they were sticking. The hinges were too accurately engineered - they needed some 'slop' so there was no resistance.

Fabricating the stallwork was an engineers job, and one fit together properly - Neil is well with others. He made this stall-considerable experience in how it

no chance of looking in mangers as they pass - there's only one no feeding for yield.

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Above, left to right: pit is full, and the straw still reasonably well dispersed. Umbilical spreading is used; tractor and scraper ride on the tracks, and the slurry and straw drop through the 4in dia tubes which are spaced at 12ins; scraping pier prevents straw building up at the edge of the pit - it floats out and disperses better, making stirring much easier.

**Slurry lagoon built for size**

The lagoon is 2m deep, and 60 m x 30 m in area. With the 400 cows and the followers bedded on straw, there is a vast amount of material being scraped each day. The self feed area itself creates a large quantity of dirty water.

Straw piled by scraping holes causes:

1. Safety problems as the scraper tractor is used as a bulldozer to push the piled straw back into the pit, with the danger of it falling off the unseen edge.
2. Safety problems when standing on the slippery straw and throwing it into the lagoon with a fork.
3. Stirring problems because the pile is difficult if not impossible to mix with a stirrer but needs shifting with a tractor and fork
4. Storage problems if the pit has to be

cleaned out early because no more can be scraped in due to the piles at the scraping holes.

**Novel scraping pier disperses strawy muck**

This neat solution puts the tractor on a pier made from heavy wall tubes with a flat track welded on top. The track is needed to support the scraper as much as provide the tractor with a place for its wheels. The pier needs strong steel with piers set in solid foundations. Neil has found other farmers in the area interested in having him make one for them. It's clear from the pictures they are a considerable help in managing the slurry. It doesn't pile up because it is never packed tight by the reversing tractor. When it drops through it has the chance to float and be carried away. regular stirring keeps the pit mixed and the floating straw on the move.



Feed bunker allows trucks to tip directly into the bays, yet the low roof keeps out weather and birds

**Rolling roof makes unique feed store**

- the biggest bulker tips straight in bunker
- saves time double handling
- no feed wasted on floor, gets wet when raining

For many farms, a delivery of maize gluten, soya or cereals means getting the loader or handler out. The bulker tips on a piece of clean concrete in the yard and the load is then transferred by bucket into the storage bunker.

This rolling roof solves the problem once and for all. The driver rolls the roof on the shed back out of the way, reverses his truck into the bunker and tips. With no roof to get in the way he can tip the truck as high as he needs, and can draw forward just as he wants. With the load delivered, he winds the roof back into place.

The rolling roof runs a railway line mounted on the top of a block wall. It is 40 ft wide and 44 ft long. The roof structure is similar to that of any other span, but additional bracing is added. The front is high enough to drive in and get the feed needed, but need be no more. Being low, there is a smaller problem from birds, and also driving weather.

Everyone benefits. Truck drivers find it excellent because they tip and are gone in the shortest space of time. No double handling means less waste, and less work. Deliveries in wet weather,

which were always a problem, are far easier.

The winding mechanism was fitted with a small petrol engine to turn the wheel, but before this was fitted up a handle was made to do the work. The handle has stayed - there's no need for anything more sophisticated. The roof rolls quite easily, particularly if helped by the wind. A strong breeze will move it down the rails without help, and so there's a latch to prevent movement.

The roof was made 9 years ago, based on a design seen in New Zealand. A similar roof can be made to cover a silage clamp, and positioned so the silage face and feeding cows are sheltered from the rain. Extend the rails back and the roof can be rolled clear of the clamp so it can be filled under an open sky. When the job's done the roof is rolled over.

Care needs to be taken to make sure the walls supporting the rails carrying the roof are sufficiently strong to handle the weight. Decent footings are needed to prevent the wall distorting and cracking.

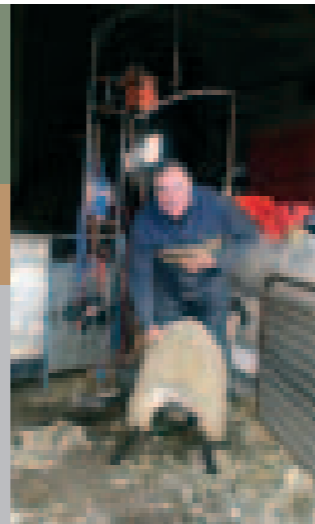
The straights are bucket loaded into a blower wagon which is used to deliver food to the three milking parlours. Mixing is achieved by adding the feed in layers and by the blower action. The rations this winter were costing about £90/ton - 2 units of wheat rolled on the farm, 2 of rape, 1 of soya meal plus minerals. The blower unit was the back of a scrap feed lorry, and the blower is driven by the tractor PTO.

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Clockwise from right: the roof is identical to any other steel one; bunkers are the wide enough to take a lorry comfortably; the roof has wheels fitted at each upright, and a rail line which goes twice the distance back; Neil Harrison winds his ingenious roof back so another load of straight can be tipped directly into the bunker; winding it back is done with a single wheel; the roof will get blown down the track, so needs shackling to the rail. The motor has never been coupled up - the 'temporary' handle works well.



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From left: note the double box technique to make some stiff load-bearing arms - the rams are new; linkage mounts on the securely on the tractor frame; a simple home built design of front linkage which would suit many farmers wanting reasonable capacity without major cost

**Home built front linkage carries a tonne**

- far less expensive than branded
- carries required weights
- fits tractor front neatly

Front linkages are often a case'. Yet the greater the more expensive it becomes. Neil wanted a lightweight

these with capacity of about a tonne. That's more than sufficient to carry the Shandy barrow, or a link box or a single furrow press. The arms and frame are made by welding two 50 x 50mm box sections together. The Waltershead ends and the rams were both bought new, the rams having a 25mm

rod and a 50mm bore. Rams are much less expensive now than they have been, and Neil thought it worth spending £160 or so for the pair of rams which are the right size and guaranteed not to leak. The linkage is fitted with an 'A' frame for quick attachment.

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a seed hopper or for the weight alone - it goes over rough calculation need to keep this very much in mind, or else they will have a machine with a very short life span. Farm builders who make it strong, and then add a bit more metal just in case, are more than likely to end up with something which will never bend, but with twice the weight it needs.



Left to right: seedbox rolls on removable wheels - the stand at the tow end folds upwards; transport uses the clevis fitted to one end of the seed box; the seeder mounts on the 3-pt - Neil uses it on the front of the tractor and has rolls behind - saving time and money. The wheels fit onto the axle and the ground drive comes from its centre.

**Barrow seeding gets top swards and cuts weed problems**

- sow the field in different directions to get more accurate results

Neil dislikes sowing grass with a fertiliser spinner.

"You have little idea of the spread width, seeds are blown by quite moderate breezes, and some are thrown further than others," he explains.

"Putting seeds on accurately provides all important cover which will suppress weeds, and at the same time provide the maximum plant population and so production. Sowing with a spinner gives a result which is generally patchy and has holes which take time to fill."

Neil sows with a Shandy barrow, made by Blair Engineers in Scotland. The 16ft wide machine is ground driven and fits on

the front linkage though it is made to be towed behind the tractor. Mounting it on the front means harrows can be towed behind. The barrow is not expensive, and if stored indoors will last pretty well forever.

They sow 150 acres of grass seed each year, and always split the seed and sow in two passes. The second is done at 45° to the first. The result is pretty accurate seeding. Seeds are ballast rolled in.

Grassland policy has changed in recent years. The plough up policy for leys is being replaced by one which keeps grass down longer, and so Italian ryegrass is being supplanted by perennial. Favourites at the moment are Aberavon, Maurice and Elgam, and Alice clover is found to work well on their land. They typically sow 15 kgs an acre.



Far left: Lumaflex lights are fitted to all trailers - they don't break on impact, are weatherproof and reliable. Vital on busy and fast rural Surrey roads. Left: the shatter-proof lens hinges out and there's stainless steel inside with plenty of meat around the terminals



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**Trailers have MOD on them - meaning heavy duty**

Although the Army trains its officers 30 miles away at Sandhurst, it gets rid of surplus equipment miles from Surrey. Sales are concentrated in Yorkshire, Glos and other far flung places. Neil finds Army sales a good source of material. One Army trailer made two for the farm. A low loading trailer has a steered axle which makes it great for going through narrow field gateways. The trailer can be steered in an arc through the gate - on the road the steering is locked straight. The steered trailer makes it possible to leave some gateways narrow. This low loader carries 7 tonnes, so is fine for moving a Drott digger shovel, a load of fertiliser and so on.

The second trailer provides regular transport for farm goods, and both will withstand the rigours of farm use.

Lighting on all his farm equipment is a priority. He fits Lumaflex sets. The glass is near unbreakable, and hinges

open. The reflectors are made from stainless steel, so don't corrode, and the electrical connections are built to top standards - no Scotch connectors in these units. Lights which fail to work not only cause accidents, they are poor farming PR. Lumaflex lights cost £50 a set, which is perhaps even twice the price of the cheapest on the market. Neil reckons their reliability and long life make the small extra cost well worth it. Dodgy lights are a headache we can all do without.

The HIAB trailer is mostly used for fertiliser, and will carry nine 1/2 tonne bags on the back and six on the front. The HIAB came from a scrap dealer, and is powered by a small Lombardini engine which once drove a compressor. The hydraulics need only a small amount of power to drive them. The engine is easy to start, and of course makes the trailer a self contained unit, which loads and unloads without any external power needed.



Top row, from left: flat loader gives roll-on-roll-off capability; diverter valves cut spool requirements; axle hinges upwards, and steering locks off for roadwork.

Far left: crane fits neatly in the centre of the trailer and is mounted on the main chassis members. Left: small compressor engine is sufficient to drive the pump on this HIAB, which is used extensively for drilling and fertiliser work - there's no need to have a separate handing machine in the field

**Self feeding 900 cows cuts costs**

- no machinery to go wrong
- minimal labour requirements
- provides fresh air, exercise, and good for showing bulling

There's no Keenan or HiSpec on these farms, all the cows walk to the feed face and help themselves.

The large herd has a total face length of 300ft, and the wire is moved 6ins a day. The length is made up of four separate clamps with widths varying from 60 to 85ft.

The cows have access to both maize and grass silage, and feed on whichever they fancy. Neil finds the cows contented, and never having to push in for food.

Teeth problems, often associated with self feeding, are no problem. The precision chop cuts maize at 7-8mm length and the grass to 20mm.

Calves and heifers get self feed silage, and are trained to the electric fence from an early age.

Winter rations are a mixture of grass and maize silage, plus flat rate meal in the parlour.

There's no mixer wagon, no out of parlour feeders, no mid day top up.

Silage quality plays a large part in herd performance.

Quality comes from quality grass leys which are replaced every five years, from weed control, particularly docks, by making sure nitrogen is absorbed and measuring sugar levels prior to harvest.

Maize grows well in this part of Surrey, and varieties are selected for their quality.

Self feeding limits the height of silage to 7ft. Clamps are made with a slight dip in the centre, so rainwater flows to the middle and then down.

As the winter progresses, concrete is fenced off so as to limit the area needing scraping.

The space for cow movement outside is considerable, and there is no crowding.



From left: cows can wander from one clamp to the other; sleeper walls, 7 ft high face, and this maize silage good right up to the edge: the recipe for low cost milk; cow condition in mid March is good. Note the 'Jersians' which are being increasingly bred. Black feet are hard and less trouble. Hybrid vigour helps conception and longevity. Smaller body mass reduces maintenance requirements.

**Conclusion**

Readers may well be open-mouthed, for the way milk is produced by the Harrisons is very different to the methods, and particularly the aspirations, of many in the industry. It is easy to make the error of chasing milk production uneconomically when milk prices are low. It's easy to spend on fixed equipment which has a negative return. This business looks big, but it supports a good number of people. There are eight Harrison families involved, and a further eight cowpeople and an additional three general workers. They all have specific jobs and responsibilities, and targets which they agree to meet. They get together regularly to discuss progress and problems.

Assets are well employed. Redundant buildings are yard space is used by others - there's a phone mast, there's the chance to do fabrication for other farmers, and some additional slurry piers have been made. All in all, the business is fascinating, for its size, and



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