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## Computers in Agricultural Management

### - Computers on the Farm - UK

G. Tuer,

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#### ABSTRACT

The development of on-farm micro computers for farm business management in the U.K. is reviewed. The type of farm and farmer that are most likely to benefit from the use of a computer are identified followed by a discussion of what a prospective user should look for when deciding to buy a micro computer and software. The benefits that are likely to be realised are discussed along with the time it takes before they manifest themselves. The author discusses his own experience of acquiring and using a computer and the benefits that were derived.

## Computers in Agricultural Management

G.R. Tuer, UK

The subject of my address today is the role of the 'on farm' micro-computer, its uses and benefits in farm business management, information recording and decision making.

The subject in itself could easily fill the time allotted to the whole conference. Fortunately, the organisers have spared you that ordeal! So, hopefully, in the time available, I can give you a broad picture as I see it, related to my experience both as a Director of the UK's largest agricultural software group, with considerable worldwide sales, and as a practising commercial farmer, making direct use of a micro-computer in the day to day management of a dairy, crop and beef farm.

In order to give some form to this picture, I have divided my address into six relatively brief areas:

1. DEVELOPMENT OF THE 'ON FARM' MICRO-COMPUTER ROLE IN THE UK.
2. THE MICRO-COMPUTER'S USE IN FARM BUSINESS MANAGEMENT.
3. THE TYPE OF FARM AND FARMER THAT CAN BENEFIT FROM POSSESSING A MICRO-COMPUTER.
4. WHAT SHOULD A FARMER LOOK FOR WHEN BUYING A MICRO-COMPUTER AND SOFTWARE?
5. WHAT ARE THE BENEFITS AND HOW SOON ARE THEY LIKELY TO BE REALISED?
6. MY OWN EXPERIENCE IN USING THE MICRO-COMPUTER AND THE BENEFITS ACCRUING TO MY FARM BUSINESS PERFORMANCE AS A RESULT.

1. So let's look at the development of the 'on farm' micro-computer role in the UK. It is worth spending a few minutes tracing the history of this development. I think this could be important to those of you developing your own systems, as the combination of experience I have gained in this field over the last 8 to 10 years, both as a user and Company Director, coupled with extensive world travel, has confirmed to me that the UK has much it can offer to 'others' who are beginning to use the micro in their agriculture, not so much in the field of hardware technology, but much more in the efficient application of this technology down at the grass roots level - in THE RUNNING OF THE FARM AS A BUSINESS.

But first it is important to recognise the contribution to agricultural efficiency through the provision of farm management information and the education in the effective use of that information that has been made by the large computer bureau services for many years. Typical examples are the services provided by DHIA in the USA and by the MMB in the UK. These services backed by their large mainframe data bases will continue to have an important place in the farm economy, but increasingly this will be alongside and in conjunction with the 'on farm' micro as the time factor in decision making becomes shorter and shorter, and the need for the farmer to look at all aspects of his business and not just one specialised area.

When the micro first became readily available in the UK in the mid to late seventies, there was very little specific agricultural software. Within a very short time the lure of a potentially large farm market place saw an abundance of so-called farm software 'experts' producing a multitude of varying interpretations of what the farmer was thought to need. Some were technical experts with no practical or commercial knowledge, others were farmers with ideas with what they wanted for their own farms but found that they had little practical applications elsewhere.

The same enthusiastic but confusing development paths were also being taken in many other countries throughout the world. Indeed our own company was borne out of just such enthusiasm.

Currently, approximately 40 companies are developing agricultural software in the UK. The majority are small and localised, only four or five operate nationally.

The type of products produced fall roughly into three categories:

1. The spread sheet type decision makers and management aids
2. The 'off the shelf' type specialist products catering for specific farm enterprises such as dairy, pigs, crops.
3. The complete farm management systems covering all aspects of the farm business, from decision aids, farm planning, cashflow projections, farm enterprise recording and analysis, through to complete financial recording and analysis.

We have been extremely fortunate over the last eight years in the UK in having what may be termed a 'Consumer Watch Dog' for the farming industry with regard to agricultural software, in the form of the Computer Advisory Unit of the Farm Management Division of the Government's Agricultural Development and Advisory Services (ADAS)

Seeing the disarray that was occurring, the unit was formed for this role. This unit has given tremendous assistance both to the farming public and the developing companies in establishing safeguards and discipline within the industry. From their vast experience of farm management application and farm education along with the entrepreneurial skills within the developing software companies, standards and procedures were established that were to provide the business with a basis on which it could gain long term respect, success and viability.

Through these standards the farmer was ensured that he was not going to be ripped off by a 'conman', that adequate knowledge of the products could be gained from an outside source, and that companies would provide a high standard of service in training of users, after sales service, updates of products, good documentation, etc. Companies not meeting those standards were unlikely to survive in this more informed market place.

In addition to the evaluation of products and services of the software companies, the Computer Advisory Unit also helped organise farm electronics shows where the farmer could view for himself the products and services offered by the companies.

This has led to a very high standard of products and services within the UK industry that are well accepted and efficiently used by farmers and agri-managers alike, not only in the UK but throughout the world as well.

## 2. The Micro-computer's use in Farm Business Management

What do we mean by farm business management? Firstly let's ask ourselves what is a farmer today compared with say 30 or 40 years ago. Previously he was more concerned with husbandry skills of crop and livestock management, age-old skills that were passed from father to son. What is he now, or what must he be to survive in today's harsh economic climate? He has to be a Banker, Accountant, Personnel Manager, Scientist and Economist - and being a fortune teller would also help, particularly when he has to cope with the whims or wisdom of Government! But very seriously, in order for his business to survive, he firstly must be a businessman with the same degree of control as any other business in the commercial world, those husbandry skills must also, very importantly, be retained.

The 'on farm' micro can provide the farmer with the means to practice all of these commercial skills. The ability and expertise to provide the degree of control and analysis necessary has been transferred to the software programs, so the farmer has his own Accountant, specialist, etc, within the machine in a form that he can understand and also efficiently utilise.

We have been extremely fortunate in farm management education which dates back over 40 years since the war, when every ounce of production had to be achieved from the land. The Ministry of Agriculture had powers in those days to ensure maximum production through control and advice - this free advice on production and economic performance has continued until this day, a situation that Margaret Thatcher's government economics is about to change!

The Ministry has experimental farms, research stations and regional offices through which information and help is readily available through local ADAS advisory offices. As I said before, we have been fortunate in having these facilities which have continually increased the awareness of farm business management techniques and application. This awareness has enabled farm management software to be developed for the benefit of farmers such as myself to use simply and with considerable economic benefit to our farm business.

It is currently estimated that 5,000 of the UK's 100,000 farmers use micros in their management, so despite all of the awareness, many farmers have not yet taken up the micro as part of their management system.

3. Now let's look at the type of farm and farmer who should be benefitting from having an 'on farm' micro.

Firstly, the availability of such a vast amount of computer technology which embraces information processing from mainframe computers operated by bureaux to the smallest micro processor used for automatic data capture, such as milkflow monitoring, feed dispensing and environmental control, these and many more all lumped under the general heading of computers has only served to confuse such a traditional industry. This position coupled with rapid development and still promises of better things to come have been a major factor towards the slow acceptance by farmers towards making full and economic use of what is without doubt able to make a strong and on-going contribution to their efficiency and profitability.

Despite this confusion, experience has now clearly demonstrated that the following categories are almost certain to improve their performance:

1. The already efficient record keeper/business manager whatever his size of farm or business,
2. The larger farmer with organisational problems,
3. Any intensive enterprise unit, eg, 75+ dairy cows, 100+ farrowing sows, intensive rotational cropping, etc.
4. Young farmer or manager with a recent college or university training,
5. A farmer on the pressure ladder:
  - a) Financial pressure/banker influence,
  - b) Pressure to sustain a competitive performance, eg in yield level or breeding or because the neighbour has one.

For this final category, benefits may not come easily as the farmer in trouble may be too far down to retrieve or the one seeking competitive performance may have too great a hill he wishes to climb, however all of the others, with the capability of efficient decision making, will benefit from using a micro as part of their management system.

4. What should the farmer look for when buying his computer system?

1. That software purchased is part of a management system that can cover all aspects of his farm business. Don't necessarily buy everything at once, but build up the total system as experience and knowledge grows (see Chart 1 attached).
2. Professional introductory training along with well documented and user-friendly software should be available with the package.
3. Facilities should be available to enable him to benefit from software improvements and updates to the package supplied.
4. Hardware should be from a reputable and established manufacturer. Where possible both hardware and software should be purchased from the same supplier, this prevents later problems between the two suppliers, each disclaiming responsibility should a fault occur.
5. Access to readily available help and further training. The training should progressively provide more advanced courses designed to ensure that the farmer is achieving maximum benefit from his software and also from the increasing amount of information being continually built up as part of his routine management recording.

Other areas he should be aware of, and a reputable supplier will make him aware in order to maintain his satisfied customer base, are:

1. That lack of knowledge or initial research leaves him with software with insufficient inherent capabilities to do the job for which it was purchased.
2. Conversely that over-sophistication leaves him with a very complicated product to do what may be a very simple job.
3. That he should accept that the micro will probably create a major fundamental change in his current office and recording procedures, and that he will initially need to make a heavy commitment in effort and time to ensure the success of the system. This, of course, would also be the case if changing or setting up a manual system and is therefore not necessarily the micro's fault.



5. What are the benefits and how soon are they likely to be realised?

Obviously this depends to a certain extent on the nature, size and intensity of the farm business and the application to which the software is used.

The benefits to any business could be as follows:

1. Immediate access to detailed information for more informed decision making.
2. Less reliance on the individual, critical information can be readily transferred to all.
3. The ability to use professional experience and expertise (scientific, financial, etc) which has been transferred to the system through the software.
4. Early identification of problem situations, giving considerable economic benefit if the problems are not allowed to get out of hand.
5. Expenses saved in office routines, eg repetitive jobs such as payroll, adding up accounts, preparing reports, etc.
6. And finally the total organisation of the complete business and the specific areas within the business.

To be specific about the timing of the benefits is a little more difficult. Some decision making may return a very rapid and immediate benefit in an economic sense, eg when to buy or sell, feed rationing, etc. It is, however, unusual for the real benefits to come quickly, which can be a reason for the initial disappointment of some first-time micro users. For the first months or even year the effort of the learning curve and the inputting of initial data will generally outweigh the observed tangible benefits. However, once past this period of learning and the building up of information, the benefits very often are greater and much more far-reaching than originally anticipated.

6. My own experience in using the micro and the benefits accruing to the farm as a result.

In preparation for this address, to give you some idea of the commitment involved, I have logged the time spent over the past year in recording, reporting and analysing the data on my own farm, which is run on a very commercial profit orientated basis. But first a little about the farm itself to put everything into perspective.

The dairy herd consists of 240 British Friesian and Holstein cows that are grazed during the summer months and during the winter are kept in a free stall unit with conserved grass silage as the main part of their diet. Approximately 60 heifers, home reared, are introduced annually. The balance of the calves born are raised for beef, using beef sires of the Angus and Limosin breed.

The 120 hectares of arable cropping consist approximately of 70 hectares Winter Wheat, which is predominately of bread making quality with the balance being sold or used on the farm as cattle feed, 35 hectares of Winter Barley which is all fed on the farm to livestock, and 15 hectares of Oil Seed Rape are grown for processing locally. To give you an idea of the intensity of cropping, yields over the last three years have averaged 8 T/Ha on Wheat, 7 T/Ha on Barley and 3.75 T/Ha on Oil Seed Rape.

115 hectares of grass for both grazing and forage are in leys of 3 or 4 years duration and form part of a 6 or 7 year rotation with the arable crops.

The few recording hours I now have to spend to keep full control of the business, and this includes entry of all data and the production of management reports and analysis can be seen from the attached Chart 2.

As you can see, on average I spend about 5 hours a week, which is sufficient to satisfy all my needs including the entry of all the accounts in a business with sales of £300,000 or in dollars \$450,000 and the strict monitoring of my dairy herd. It is these two activities that take up the bulk of the computer time involved.

Obviously in the early stages of use the amount of time which had to be spent was much greater as this involved the setting up of the accounting structure I required to suit my business, and the detailed information necessary to set up the dairy herd data to gain maximum benefit. A word of caution here, thought and effort at this point gives considerable benefits later.

What benefits has the use of the computer given me? I think this can be divided into two areas:

Firstly the very practical area of the removal of 'hassle' and time-consuming chores, and incidently I would include in this that it sets a discipline within the business which I am sure most businesses need. It is too easy to let things go and save the office work for a 'rainy day'. Examples of these are:

1. Easily and accurately prepared monthly accounts, within days of each month end.
2. Calculation and reconciliation of monthly Value Added Tax payments or repayments.
3. Payroll administration time reduced by over 100%.
4. Much more comprehensive dairy records are maintained and analysed in a fraction of the time it would take manually.

The second area is the economic return to the business either through the saving in cost or more importantly the increase in profitability through improved technical efficiency. Simple examples of this in my case are:

1. Much tighter financial control resulting from accurate budgetting/cashflowing and then continual comparison against current performance (this also pleases my bank manager).
2. More efficient utilisation of dairy concentrates has resulted in a gradually improved profit over concentrate feeds (£5280 for the herd last year, an improvement of £22 per cow).

It is however not always easy to pinpoint a series of major benefits, often it is a sum of a lot of small factors which add up to a significant increase of profitability and a feeling of being totally in control of your business ready to meet the challenges that lie ahead, including those not related to my own efficiency or the climate but those inflicted via the wisdom or whim of Government.

I hope this brief picture that I have painted has given you some food for thought on the 'on farm' micro and its use on the UK farm. To have gone into any more detail about a particular subject or item of software would not have achieved my objective and would have been too time consuming.

I am in no doubt that my investment in my micro and farm management software, both in time and capital, has paid for itself many times over, but then, maybe, I picked the right company!

Experience, Ladies and Gentlemen, has clearly demonstrated to me that those farmers wishing to RUN THEIR FARM AS A BUSINESS would be wise to investigate the opportunity that the micro-computer offers to them.

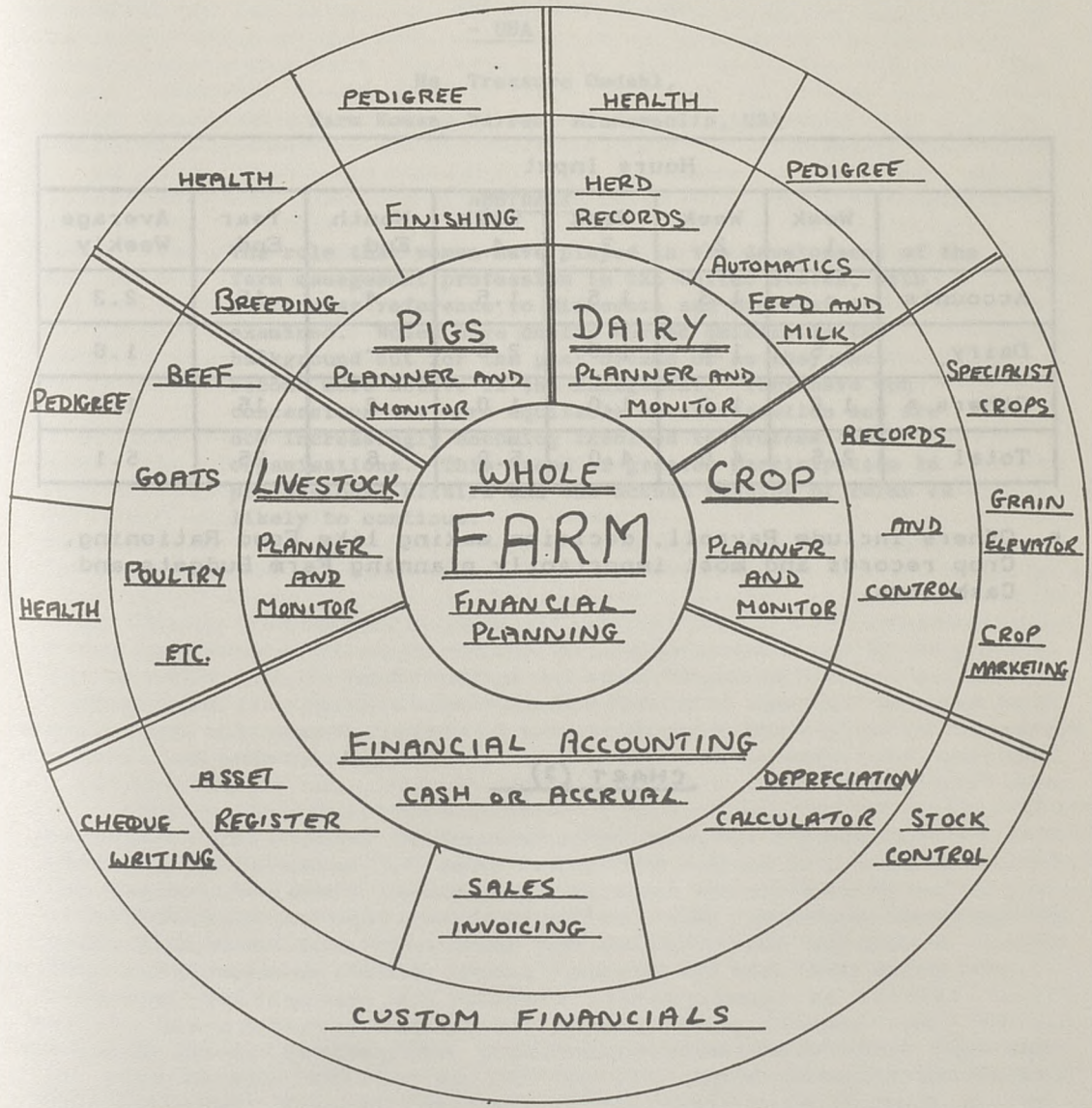


CHART (1)

Hours Input							
	Week 1	Week 2	Week 3	Week 4	Month End	Year End	Average Weekly
Accounts	-	1.5	1.5	1.5	4	10	2.2
Dairy	1.5	1.5	1.5	2.5	-	-	1.6
Others *	1.0	1.0	1.0	1.0	2	15	1.3
Total	2.5	4.0	4.0	5.0	6	25	5.1

\* Others include Payroll, decision making like Feed Rationing, Crop records and most importantly planning Farm Budgets and Cashflows.

CHART (2)