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USING A MICROCOMPUTER IN THE NURSERY BUSINESS

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My microcomputer was purchased to serve as a tool for learning about computers in general. Our company had reached a size and complexity level that made consideration of our own computer system necessary, but I really had no good basis for comparing the various features available. The \$2500 spent on a micro seemed small compared to the \$15,000 to \$50,000 at stake for a complete business system.

Computer basics. A microcomputer is considered to be a desk top machine, as opposed to mini and main-frame computers, which require much more space and are many times more costly. The so-called "personal" computers are microcomputers. All computers, micros included, have certain features in common: a CPU, an I/O, a clock, and a memory. The CPU (central processing unit) does the work or calculations of the computer. The I/O (input/output) gets data to and from CPU. The clock times the various operations and makes sure the computer doesn't try to do two things at once. The memory stores information. Memory is of two types: ROM (read only memory) resides permanently in the computer and contains instructions and codes that cause the computer to operate in a certain way. RAM memory (random access memory) is temporary, and everything is lost when the power is turned off. RAM memory holds the programs and data being used at the moment. Microcomputers are often compared by the size of the RAM memory. My Apple II is a 48K, meaning it has 48,000 bytes of RAM storage capacity. Although these numbers really have little definitive meaning to the user, it is often implied that the bigger the RAM, the better the machine. RAM size becomes important when it limits the size of programs that can be run or data that can be handled. The 48K RAM is the

most popular for beginning users, and options are now available for up to 256K RAM. The above components together form the hardware of the computer. The usable system requires the addition of a video (TV), data storage device (tape or disc), and possibly a printer. With these added pieces of hardware the computed results can be viewed (video), saved permanently (disc reader or tape machine), and a hard copy printed (printer).

Computer software, or programs, must be written in the same language as is located in the ROM. In the case of my Apple II, this is called Applesoft. It is a version of a more universal computer language known as BASIC. This language uses understandable words and phrases for its commands as opposed to the more symbolic languages of Fortran and Cobol, which are used for programming the larger mini and main frame computers. The microcomputer languages are easier to learn, but programs do not run as fast or efficiently.

Useful applications. Computers are at their best when set up to handle simple, but repetitive tasks, such as keeping track of large blocks of data. It would seem obvious, then, that bookkeeping would be the first application one would think of assigning to a computer. In our case, the micro system could not handle the volume of data associated with the various accounting procedures. We required that order entry, invoicing, accounts receivable, and general ledger all be interactive, and that several terminals be in use simultaneously. This was too much, and our decision was to go with on-line terminals tied to one of the major computer firms in our area. In deciding whether to use a microcomputer for bookkeeping work, look at the number of transactions or entries you will need to process. Consider also how you will back up your data, who will do the data processing, what would happen if you had a power loss or fire. Compare several systems and bookkeeping alternatives. If you do decide to use an in-house micro system, there are several good software packages on the market. Try them out before you buy.

Probably no other single piece of software is so versatile or has become so popular as VisiCalc, the electronic spread sheet. When added to a microcomputer of 48K RAM or more, the result is a powerful management tool. Financial models of budgets, crop production, inventory control, and endless other situations can be created and manipulated. I have found no better way of understanding the dynamics of my business than by using the VisiCalc program to change then recalculate the numbers in my budget. It soon becomes apparent which factors influence profit significantly, and which can be altered to accommodate a changing economic situation. For the new user

of this software, there are now newsletters and complete books on the subject of using VisiCalc.

There are a number of data base management programs that can be purchased right off the shelf. Their usefulness often lies in how well the instructions, or documentation, is prepared. This quality is known as "user friendliness". Most of them function as electronic card files and permit the information catalogued to be retrieved by any number of codes, such as by date, or subject matter, or salesman. We use such a program to keep track of incoming shipments. Other growers I know use these programs to catalogue pesticide usage and set up growing schedules. Again, this is software adaptable to so many nursery situations imagination is the only limitation.

The third kind of packaged software I find useful is word processing. I am just beginning to utilize it fully, but have now eliminated the typewriter that used to be in my office in favor of the microcomputer and its printer.

We occasionally like to look at our financial data in graph form and bought a plotting program to draw the graphs. I have found this to be interesting, but not nearly as useful as the others. I would probably not purchase this software again.

Programming your own. Those who buy a microcomputer and believe they will be able to write their own programs, as its sometimes implied in the advertisements, are in for a shock. It is extremely time consuming, frustrating, and not at all cost effective for the non-professional. Consider the example below, which illustrates a very simple payroll system. The components required include:

Files

- | | |
|------------------------|------------------------|
| 1. Payroll master file | 2. Payroll transaction |
|------------------------|------------------------|

Programs

- | | |
|---------------------------------------|---|
| 1. Add/change/delete master file | 3. Payroll program |
| 2. Program to create transaction file | 4. Utility program to print master file |

This simple payroll system was used by permission of Professor Michael Moore, Business Data Processing, University of Houston — Downtown, 1 Main Street, Houston, Texas 77002.

In the even simpler case of writing a program to calculate parts per million given the fertilizer application rate, we are still dealing with about 300 separate statements. I'm told that programmers consider it a good work day if they can design, write, and debug 10 statements. You quickly find out that if you are a busy manager, you just don't have the time to write your own software. The exception is that you do it because

the computer becomes your hobby, but I personally have not had the time for it.

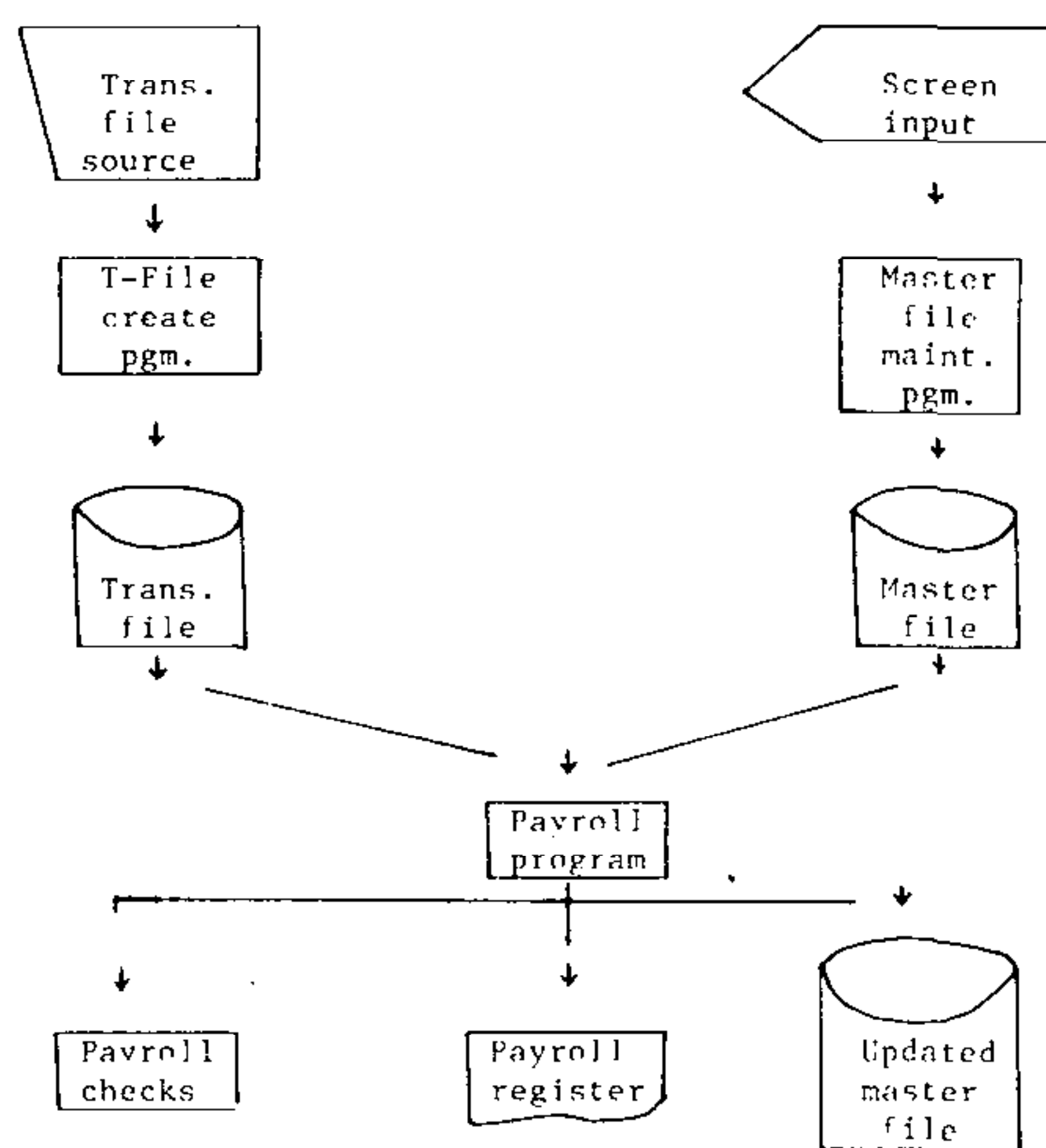


Figure 1. Systems flowchart for a simple payroll system.

Table 1. Estimated time and cost for preparation of each program.

Program #	Design	Programming	Testing	Total
1.	2	3	2	7
2.	1	2	2	5
3.	3	4	4	11
4.	1	1	1	3
TOTAL	7	10	9	26
Total Estimated Hours:		26		
25% Cushion/Overhead:		6.5		
Projected Total		32.5	@ \$35 = \$1137.50	@ \$50 = \$1625.00

Table 2. Cost of in-house programming vs package programming based on cost/benefit analysis

In-House Cost:	\$1137.00 – \$1625.00
BPI* Payroll System:	\$ 400.00

* Registered trademark

SUMMARY

My experience with microcomputers leads me to offer the following advice to the nurseryman:

1. Consider the purchase of a small computer as a management tool, rather than an accounting aid, unless you are convinced it can accommodate your present needs and future growth.

2. Buy your software. Unless you are a programming whiz, you won't be able to produce programs as good or as cheap as what is already on the shelf.
3. Visit your computer store often. New software is constantly appearing, especially for the more popular computers.
4. Decide what role the computer is going to play in your life. If it is to be used as a tool, don't over-complicate things by setting up computer files for things that are best done manually.
5. Select a computer brand that will not become obsolete. The field is progressing very rapidly, but the better companies will continue to support users of their older models.
6. Select a computer that can be serviced locally.

NEW MOUNTAIN LAUREL SELECTIONS AND THEIR PROPAGATION

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Mountain laurel (*Kalmia latifolia* L.) is coming of age. Beautiful selections have been available since the 1800's, but because of propagation difficulties these and newer selections have been largely ignored until recently. Selection efforts by C.O. Dexter, Sandwich, Massachusetts, in the 1930's, followed shortly by selection and breeding by the Mezitts, Weston Nurseries, Hopkinton, Massachusetts, began to focus attention on this species in the U.S. A.G. Soames simultaneously selected pinks at Sheffield Park, Sussex, England. He presumably also used material originating with C.O. Dexter but obtained through the Arnold Arboretum, as well as with material from the Knap Hill Nursery. Research begun at the Connecticut Station in 1961 on *Kalmia* has not only demonstrated a wide range of desirable horticultural traits in mountain laurel but has also shown that many of these characteristics are simply inherited, and thus can be readily manipulated by the breeder (2,4). New cultivars have recently been named and released and new selections are anticipated, including five that are described here for the first time. More efficient means of vegetatively propagating them are evolving.

Seed propagation. Seed propagation is slow, but tried and true, and may still be the best means for multiplying the normal or wild-type as well as some selected forms that breed true-to-type. Self-pollination is not recommended because of