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IMPLICATIONS OF MICROCOMPUTER TECHNOLOGY FOR AGRICULTURAL ECONOMICS PROGRAMS

Richard A. Levins

I have often heard the microcomputer compared to the tractor with respect to its potential impact on agriculture in the United States. From the viewpoint of agriculture as a whole, such comparisons must be regarded as overstated. The vast social, economic, and production changes brought about by mechanizing agriculture overshadow anything I see on the on-farm computer horizon.

From the viewpoint of the agricultural economics profession, however, I see the tractor/computer comparison as being understated. We in agricultural economics enjoyed relatively smooth sailing while our colleagues in agronomy, horticulture, agricultural engineering, and the animal sciences were flooded with new mechanical and chemical technologies. Now it is our turn. Microcomputers are our combines, herbicides, and hybrid seed.

In this paper I will briefly explore some of the implications this new technology has for our profession's popularity, for practicing agricultural economists, for the role of computers in our programs, and for our clientele.

POPULARITY OF THE PROFESSION

One implication for agricultural economics is that the microcomputer promises renewed popularity for our programs. Best of all, this popularity comes at a time when it is needed the most.

For less than \$5,000 today's farmer can choose among dozens of computing systems powerful enough to do record keeping, financial analysis, ration formulation, budgeting, and inventory management. Which system to buy and how to convert its potential into actual management assistance are questions which the majority of farmers in the United States will ask someone during the 1980s. The initial experience of several states indicates that that "someone" will be agricultural economists.

Partly because of the subject matter of our discipline and partly because of our traditional involvement with computers, agricultural economics has an opportunity to play a major role in introducing computers to farmers. Our possible involvement ranges from basic training and education in computer use to repackaging of traditional subjects (record keeping, budgets, etc.) and

includes the development of decision aids and information systems which will revolutionize agribusiness management. For once, our profession has a technology of its own to introduce.

Perhaps not surprisingly, the initial ground swell of popularity for microcomputers has more often than not caused them to be seen as a "problem." Software development and distribution are problems. Being flooded with calls from county agents and farmers for information is a problem, as is lack of trained staff. The low quality of some software is a problem. That some land grant software duplicates other land grant software is a problem. The list goes on.

Dealing with "the problem" by forming the requisite committees, calling for standards, and calling for new and innovative ways to recognize achievement can easily cause us to turn inward and completely miss the professional opportunity of a lifetime. If our worst problem is that our profession is destined for popularity during times when funding for traditional activities is drying up, we are indeed fortunate.

One possible response to the increased demand for microcomputer services is to avoid it as best we can. A good argument that software development and distribution is a service activity best left to the private sector is all that is needed to minimize the microcomputer's short-run impact on our programs. That the computer's long-run impact will leave demand for traditional activities and delivery systems unchanged must be assumed if one is to regard avoidance as a safe path. In my mind, it is possible that a land grant university not heavily involved in servicing client needs for computing support will be regarded as an anachronism. Being regarded as such is not likely to enhance our chances for increased or even constant funding.

An alternate response, and one which I favor, is to go for maximum involvement in this area. This will, of course, have considerable impact on our programs, since in times of tight budgets we are largely talking about reallocating existing resources. There are risks involved, primarily relating to not being able to meet the increased demands for our other services. I can only hope that our clientele will assist in providing additional resources to support efforts aimed at aggressively pursuing what they perceive to be relevant. We cannot be sure of such support until we make the first move, however.

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THE AGRICULTURAL ECONOMICS PROFESSIONAL

The role of the agricultural economics professional in the next few years is simply this: Become familiar with and use microcomputers in on-going work. This is not a difficult task. After all, 12-year-olds routinely take BASIC programming courses, and our high schools have microcomputer laboratories that put our land grant agricultural schools to shame. Learning to use the microcomputer is easy and addicting.

The hard part of the job is already done—we understand our subject matter. It is much easier to train an agricultural economist to program than to train a computer scientist in agricultural management. Someone will arise from the hodgepodge of professional hybrids to be an authority on farm computer use, and we are closer by far than anyone else.

For this reason, I welcome the current budget crunch in an odd sort of way. It has made it nearly impossible for us to hire programmers. At this stage of the game, programmers could delay our own computer learning experience. We need to write our own programs for the time being. Look at it this way: we would laugh at the thought of hiring a professional who had good ideas but was illiterate. The idea of hiring ghost writers for staff members is unthinkable. The same goes for programming.

Does this mean that we must now recruit faculty from computer science departments? Must our new agents be computer wizards? Of course not. When the on-farm computer becomes commonplace in the next few years, it will become regarded as no big deal—a powerful tool, but nothing more. The use for the tool, which is nothing more than our traditional subject matter, will be the focus. To choose one job candidate with a computer course under his or her belt over one with superior subject matter skills would be tragic. But at the same time, a candidate with no interest in using skills in relevant ways must be viewed with suspicion.

I often hear professionals wondering if their efforts in modern computing will go unrewarded by administrators. How will they evaluate software versus publications? There is little to substantiate such worries. Software, after all, is a publication in the sense that it requires published documentation. Software without documentation is as worthless as research notes which have not been written up and properly should receive little recognition. But software as the subject of publication will not only be a publication, it will be a well-received publication. Administrators trying to deal with the problem of no computer expertise, no software, nothing to justify their twentieth century existence, will love it.

My second point, then, is that we as professionals must become proficient microcomputer users. Computers will permeate our programs, and being a non-participating bystander in a time of budget cutting can only be regarded as suboptimal, if not downright dangerous.

THE ROLE OF THE COMPUTER

A typical question concerning microcomputers might be, "Will they run SAS and SPSS as well as a main-frame?" To ask such a question is to miss the boat. If the role of the microcomputer is only to better satisfy our existing computer needs, then it is hardly worth mentioning. The microcomputer is not a tool to expand our own computing ability; it is a tool to expand our clientele's computing ability. The difference is by no means trivial.

In agricultural economics, computers have been the means by which we produced "answers" which were then delivered to clientele and/or put to rest in the journals. Computers allowed us to solve problems that could never be solved before, not to mention a few problems that may not have needed solution before. But the problems could seldom be those of a particular client, so we addressed the concerns of such contrivances as model farms. The model farms worked well enough, I suppose, but I was never very comfortable using them in Extension. An amazing number of the farms I work with are not model.

The microcomputer doesn't deliver answers, it delivers methodology. On-farms software is simply a powerful version of the worksheets we have produced since Day One. In this sense, such software is radically different from its predecessors. Our job now is not to write programs for our own use or to manage a model farm. Rather, we will write software for others to use in managing their farms and teach them to use it. This is the heart of the so-called "farm computer revolution."

The third implication, then, is that computers will no longer provide distance between us and our clientele. Instead, they will become the point at which we and our clientele most often touch.

CLIENTELE

Finally, there is the implication that the microcomputer will bring about a shift in our efforts toward management and marketing applications aimed at commercial agriculture.

The demand for microcomputers will not come from those who study macro problems, from environmentalists, or from resource economists. It will come from a clientele that is overdue for a stay in our limelight—commercial agriculture. I know of no better way to interact with farmers, ranchers, and agribusiness managers than with computers. These people are interested; they see the computer's potential, and they are eager to learn.

The agribusiness group is keenly aware of the need for improved management and is willing to fund efforts to develop computer aids to this end. As they begin to more forcefully seek software and training, we may well see a resurgence in decades-old subjects such as record keeping, cash flow, and budgeting. While important in and of themselves, these subjects will also serve as a way we can develop and train those who will

use more sophisticated computer applications—which will challenge our researchers for years to come.

SUMMARY

These are excellent times to be in agricultural economics. In the next several years our popularity (read funding) will improve. We will have many chances to learn and use a new management technology that will

permeate all of our programs as calculators do now. With computers we will assume a new role with our clientele, working with them as partners rather than as high priests. Work with our agribusiness clientele will be more relevant in a time when this is sorely needed.

The microcomputer is not a problem to be solved or swept under the rug. It is a tremendous opportunity. New sources of funding, new ways to interact with our clientele, and new challenges to keep our professional lives interesting abound.

