ROLE OF THE SOUTHERN AGRICULTURAL ECONOMICS ASSOCIATION IN EXTENSION

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In a recent discussion by three Fellows of the American Agricultural Economics Association (AAEA), it was observed that if the Land-Grant University System were to be created today, there would be *no* extension component. For those involved in the discussion, this was not a matter of controversy. It was fact. That is a sobering thought for one who has committed a major share of his professional career to extension education.

Questioning of the relevance of extension in today's agriculture throws a whole new perspective on the issue of the role of the Southern Agricultural Economics Association (SAEA) in extension. Therefore, one is compelled to analyze a set of broader issues relating to the relevance and role of extension in today's agriculture before drawing any conclusions regarding the role of the SAEA in extension. These include:

- a review of the major forces affecting agriculture out of which research and extension problems will evolve,
- an analysis of the resulting challenges to the Land-Grant System (hereinafter referred to as the System) and particularly to extension, and
- a refinement of those challenges for the agricultural economics profession.

Subsequently, implications will be drawn for the role of the SAEA in extension education. This approach is taken at the risk of not treating any of these topics in sufficient depth to be meaningful. The paper might, therefore, be viewed more as providing a basis for further discussion than for provision of definitive answers.

FORCES AFFECTING AGRICULTURE

Most of the problems with which agricultural economists deal involve adjustments to change. Our profession, more than anything else, is an aid to understanding and making complex economic decisions.

Four types of change will likely preoccupy our profession over the next two decades:

- internationalization,
- technology,
- industrialization, and
- resource mix.

None of these forces is new to agriculture. Yet, each presents unique, new challenges for extension educators and for researchers attempting to serve their needs.

Internationalization

Nearly a decade ago, Schuh (1976) challenged the profession to come to grips with the realities of an open world economy. At the time, driven by a weak dollar and a tight supply-demand balance, exports were growing on a path from $7 billion to a peak of over $40 billion in 1981. The profession was warned that agriculture had entered a new era with macroeconomics and international policies having a profound impact on agriculture and its institutions. A specific challenge was made to extension regarding the need to educate farmers, farm leaders, and policymakers on the factors affecting trade.

The predicted profound impact, indeed, has become a reality. Farmers, agribusinessmen, economists, and policymakers alike have been forced to direct their thinking to the forces of a weak and subsequently a strong dollar, from high inflation to low inflation, and from a low to a high real rate of interest. The importance of understanding these economic forces was emphasized to every agriculturalist—teacher, researcher, and extension worker.

Technology

Agriculture has already entered into the era of a bio- and information technology revolution (Office of Technology Assessment

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(OTA); August, 1984). Manifestations include growth regulators, embryo transplants, computerized farm management decision models, and electronic auction markets. While technological change is not a new occurrence in agriculture, both the rate and complexity of change appear to be accelerating. The driving forces behind this acceleration include:

- sharply accelerated public sector investment in basic biotechnology research beginning in the early 1970's (OTA; January, 1984) and
- even larger increases in private sector investments associated with the bestowal of private property patent rights in living organisms and computer related technology (software).

It will be argued below that these changes have the most fundamental implications for the system since its creation.

Industrialization

As an institution, the family farm is rapidly dying.[1] Available evidence suggests that moderate size farms in the $100,000 to $500,000 gross sales range in the United States are declining in number. The result is a much noted bimodal distribution of farm numbers as related to size. More than anything else, this is the product of the industrialization of commercial agriculture. It has been occurring for a number of years, but was not recognized as a serious challenge to the family farm until the 1970's (Guither). For over a decade, USDA fostered the illusion that moderate size family farms were as efficient as larger scale farm businesses. In the process, they completely ignored deficiencies in the skills of purchasing, marketing, and management. More recently, serious questions have been raised concerning the family farm's competitive position (Smith et al.; *USDA*).

The last two "nails in the coffin" of the family farm could be the transformation to an open world economy and the technological revolution. The world economy transformation is subjecting the family farm to a complex new set of risks that require a higher level of financial and market management than typically exists in family farm units. The technological revolution will mandate a higher level of formal education than is typical of the family farm unit. The larger scale industrial firms that end up in control of agriculture will convert the System's clientele to industrial farms. But, as indicated below, these industrial farms may not be the System's clientele because the System may be ill-equipped to serve them.

Resource Mix

Investments in human and capital resources are going to become more important. In the future, a high school education simply will not be sufficient for a fulltime farmer to survive. As a result, vocational agriculture education in the high schools will be limited in usefulness to training hired farm labor—not in developing management skills. Farming has become sufficiently complex that production, marketing, and management functions require a working knowledge of computer operations. This will be increasingly true in the future. Production specialists will require a working knowledge of the fundamentals of new bio- and information technology developments.

With the biotech revolution, the nature of resource mix in agriculture will likely change. Human capital will be considerably more important. Working capital requirements will probably increase. Future needs for large capital investments are more uncertain.

CHALLENGES TO THE LAND-GRANT SYSTEM

The challenges presented by these forces are broader than extension itself. In certain respects, they cut at the heart of the land-grant concept and the franchise under which the System was developed. Within two decades, the System will be much more like a medical, business, or engineering school than like today's agricultural research, extension, and teaching complex.

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[1]The author prefers not to get embroiled in an argument over what constitutes a family farm. Suffice it to say that it is an institution where farming is a primary source of income; the individual family unit is at least a partial owner and controls the major farm production, financing, and marketing decisions; and the family unit provides a significant portion of the labor utilized (Stanton). These farms are generally in the $100,000 to $500,000 gross sales range.

The Social Contract

Institutions are created under a specific social contract that instills certain obligations by which the performance of the institution is judged (Locke et al.). The Land-Grant System was created under a unique social contract. It specified that technology discovered in the System was to be freely available to all firms and/or individuals desiring to exploit it. As a result of this social contract, land-grant scientists have historically worked with firms and/or individuals in developing, adopting, and implementing new technologies without the burden of protecting property rights.

That social contract now appears to be unraveling. The source of change is a series of legislative actions and court decisions that have extended patent rights to plant varieties, living organisms, and computer software (OTA; January, 1984). These actions made it possible to patent virtually all discoveries within the agricultural research system. With little apparent regard for its social contract implications, a variety of arrangements between land-grant universities, scientists, and private firms have been spawned. These arrangements were designed to protect and capture the economic rents from System discoveries.

While previously treating university-business ties at arms length, such arrangements integrate business into the university fabric much as is the case in colleges of business and engineering. In the process, questions develop relative to who controls agriculture's research agenda, the allegiance of scientists to their university employer, and the willingness of scientists to publish potentially patentable discoveries. To the credit of the Extension Service Committee on Organization and Policy (ESCOP), these questions have been and are being addressed. However, the basic social contract issue has not been resolved. The right to use discoveries is no longer freely available. Certain individuals and/or firms are being conferred exclusive benefits to the possible detriment of others. The effect is to internalize the costs and/or rents from discoveries. With internalization, the potential for inequities or patronage creeps into the System with plausibly profound impacts on the structure of agriculture.

At the same time, it has to be recognized that the issues involved have complex competitive elements associated with them. Property rights may increase the willingness of private sector firms to invest in and develop new discoveries into marketable products (Evenson). If the System refuses to confer private property rights on its discoveries, it is not in a position to compete for the support of its research program by private industry. The ability of the System to compete for the services of top scientists is thereby adversely affected. In many respects, the System has been placed in a position where it can not win if it refuses to participate in the newly conferred right. That does not negate the profound implications for the nature of the System.

Changing Research-Extension Roles

The bestowal of property rights of System discoveries has had some interesting, but predictable, effects on the allocation of resources within the agricultural research complex. Striving to capture a competitive share of private sector funding, System resources are shifting in the direction of more basic bio- and information technology research. The potential for gaps developing between the traditional functions of problem solving and new product testing are evident as resources are drained away to address more basic research issues. While it might be that biotech procedures will help in problem solving, this position is complicated by the reality that only certain universities have sufficient resources and are in a position to compete for private sector support in high technology research. Traditional extension-research interaction and feedback mechanisms could thereby break down—particularly in states that are not in a position to command a major biotech component. This could become a major problem in the South.

New product testing and evaluation are becoming a less popular research activity. In some instances, they are being forfeited or even pushed over to extension. Interestingly, extension has no research charter—an item of contention in the California research neutrality litigation. The product testing function becomes even more important in the biotech era when a flood of new complex products is expected to enter the market.

The agriculture research and extension system is truly in a state of flux. It is an excellent time for role study and evaluation.

CHALLENGES TO EXTENSION

Changes in the System create some very serious challenges to extension. These challenges have been inadequately perceived and articulated (Extension Service (a), (b), (c)).

Keeping Up

Extension scientists are being caught in a whirlwind of technological change. Increasing difficulty is being encountered in simply keeping abreast of technological developments and their scientific bases. The proportion of resources devoted to staff training and development will need to be sharply increased.

Adjusting Structure

The theory upon which extension was developed was that of the research scientists conveying the knowledge of discoveries to the extension specialist who, in turn, supplies information to the county agent who teaches the farmer. Over time, this concept has gradually but persistently broken down as agricultural technology has become more complex and insufficient resources have been devoted to staff development. As a result, more emphasis has been placed on direct specialist-to-farmer education. More specialists have been placed in the field to have closer proximity to their clientele, but at the cost of less contact with research scientists.

Care must be taken not to underemphasize the importance and appropriate direction of adjustments. While the number of specialists increased by 16 percent from 1966 to 1975, in times of tight budget the number of specialists has actually declined by 18 percent from 1975 to 1984, Table 1. In contrast, the number of county agents declined by less than 2 percent from 1975 to 1984. While the direction of adjustment in agriculture suggests the need for more specialist assistance, the extension system is moving in the opposite direction. In the meantime, there is increasing recognition that the role of the county agent has become more one of an information broker and program organizer than an educator. But with fewer specialists to call on, how can these functions possibly be performed satisfactorily? At the same time, an increasing number of county agents are becoming technologically obsolete, making it impossible to rely on them for performing the technology transfer function.[2] In frustration over the performance of the System, it can be expected that an increasing number of the largest and most progressive farmers will go directly to the extension specialist or maybe more often to the experiment station research scientist. This may be happening already, although there is little agreement on the extent.

Changing Clientele

Instead of dealing directly with the issues posed by the challenges of keeping up and adjusting structure, extension's reaction has resulted in a change in clientele. Change is difficult to quantify. Gross federal and state expenditure statistics suggest no material change in the proportion of resources devoted to agriculture versus other programs such as youth. The only indication uncovered is a decline in the proportion of extension staff at the specialist level, Table 1. *This is precisely the opposite trend one would expect if extension were addressing its technological and structural problem.*[3]

TABLE 1. TRENDS IN THE NUMBER OF EXTENSION PROFESSIONAL STAFF, SELECTED YEARS

Year	Specialist	County	Total
1966	3,641	10,451	14,092
1975	4,224	11,357	15,581
1984	3,581	11,140	14,721

Source: Personal Communication With Extension Service personnel, USDA, 1984.

Quite clearly there has been a substantially increased flow of resources into urban-oriented programs. Activities such as urban 4-H clubs, urban gardening, landscape, and turf problems are classic illustrations. Although the latter illustrations should be considered agricultural, they represent a distinct shift in

[2]Many extension specialists and research scientists have become technically obsolete also, but not in the same proportion as at the county level.

[3]The author has developed serious misgivings regarding the usefulness and/or accuracy of extension statistics regarding the allocation of resources between youth and agriculture programs. Arguably, the specialist statistics are more telling and convincing evidence.

clientele away from traditional farmer-oriented crop and animal agriculture.

Evaluating New Technologies

A historically important function of the System has been that of providing farmers with evaluations of new products, practices, and input combinations. While often avoiding the inference of these being "recommendations," they are just that.

While this evaluation role was once played largely by experiment station scientists, extension now appears to be assuming a larger share of the responsibility. It is interesting to speculate on why this has occurred. Is this a product of the shift by research scientists to more basic research? Are the professional societies no longer rewarding this activity as publishable research? Are experiment stations spinning off this activity because it is unpopular to its increasingly agribusiness-oriented clientele?

It is even more interesting to speculate on the potential future willingness of extension to perform this evaluative function without overt legal research authority. In addition, conflicts of interest will undoubtedly develop as universities develop property rights and royalty interests in products for which extension has the responsibility to evaluate and disseminate information.

CHALLENGES TO AGRICULTURAL ECONOMISTS

Some very important implications and challenges arise from these developments for the agricultural economics profession. Some of these challenges have already been met and fortunately addressed. Like extension, other challenges are being bypassed, ignored, or not even being perceived.

Keeping Up

In a sense, the technological era hit the agricultural economics profession more than two decades ago with the development of the computer. Analytically, many in the profession were bypassed—perhaps more in extension than in research. A research economist has had difficulty surviving professionally without computer analytical skills. Survival for extension economists has been easier, but perhaps not to the best benefit of their clientele. Quite clearly, as one moves down through the ranks in extension, computer skills are seriously lacking.

Access to computer hardware appears to be a considerably more significant problem in extension than in research. While a personal computer seems to be standard equipment for the serious research scientist, it is not in extension. Yet, the personal computer has more relevance and importance to the extension program than to the research program.

One has to be impressed by the aggressiveness with which extension economists have come to grips with the forces of industrialization and internationalization of agriculture. Extension economists were leaders in perceiving the trends toward industrialization (Guither). It can be forcefully argued that extension has been amazingly successful in taking on the internationalization challenge. Extension's *Speaking of Trade* project led the profession in its use as a staff development and classroom teaching aid. This is a case where extension may have been more effective than research (Christainsen). Many contested research issues remain that make extension's job very difficult. For example, what is the relative importance of the value of the dollar, world recession, developing country debt, and high loan rates in affecting exports? Or, what is the comparative magnitude of domestic and export elasticities as it relates to Schuh's (1983) contention that traditional farm policies are outdated?

Keeping up with changes in production technology presents more formidable problems for the profession. Despite its importance in influencing agriculture, technological change has not received its proportionate share of study by agricultural economists. Yet for production, marketing, and policy economists, technology is a key to future problems. How can production economists advise farmers on production practices or combinations unless they are state-of-the-art? Likewise, how can marketing economists perceive the outlook or policy analysts advise policymakers without a state-of-the-art knowledge of forces affecting supply? While interdisciplinary research and extension activities were once in vogue, this era appears to have passed. In the process, there is clear danger that the profession is

internalizing itself to the state of irrelevance—much like the general economics profession has done.

CHANGING CLIENTELE

As agriculture has changed, the agricultural economics profession has reacted much like extension. That is, it has sought new clientele rather than adjust to change. This is particularly the case with regard to industrialization.

A logical professional reaction to the trend toward industrialization of agriculture would be increased concentration on serving the needs of the agribusiness clientele. There was a period in the mid-to-late 1960's when it appeared that this was happening. Agribusiness teaching programs were established in many universities. In a few instances, such as Purdue, credible research programs were developed around individuals such as Snyder and Babb. In an equally small number of instances, extension began to serve the needs of agribusiness—particularly in retailing, grain marketing, and dairy marketing. Most of these programs have since ended. Those that are still active, such as the Purdue Dairy Merchandising Academy, have a strong industry franchise and support. One hopeful sign involves development of computer software for farmers.

While the AAEA has, from time to time, attempted to restore industry ties, these efforts, at best, have been only marginally successful. The most significant AAEA development in restoring agribusiness interest, and for that matter the interest of extension, is the outlook sessions at the summer meetings.

The lack of success and/or withdrawal from serving the needs of the agribusiness sector raises serious questions about the future of the marketing, management, production, and agribusiness components of the agricultural economics profession. This is the case for research, extension, and teaching. The key is the lack of a research thrust in the agribusiness area. Without that research thrust, irrelevance and eventual death are just a matter of time.

Keeping Relevant

The research profession has developed an equally troublesome problem. The vast majority of extension specialists find their research needs are not being served. Increasingly, research rewards appear to be oriented toward articles produced for other researchers. *If the System is to survive, extension must be a primary outlet for research. If the agricultural economics profession is to justify anywhere near the current level of public support, it must supply answers to the applied problems of agriculture.*

The research orientation issue is not just the fault of the researchers. *All too often extension economists never even attempt to communicate with the researchers, but then complain about the lack of applied research addressing the problems they perceive. All too often research results having direct applied implications go uninterpreted within the same department.* That is not the fault of the researchers; it is the problem of extension personnel.

Some of this is an organizational problem. A number of southern extension systems still hold to the antiquated system of separating research and extension. A number also refuse to provide extension specialists academic rank. *Better death prescriptions could not be devised in a technological revolution than policies that separate extension and research or relegate extension to second class professionals!* In addition to scientific skills, an extension economist has to have unique communications skills.

An important part of the communication problem results from a lack of departmental leadership, insufficient professional rewards, and a lack of extension staff involvement in departmental activities. Making the System work as it was intended is a professional responsibility of the research, teaching, and extension faculty. Each must carry its share of the load in relating to one another and making the System work.

Helping the Mid-Sized Farm Operations Survive

The trend toward the industrialization of agriculture is as much of an economic phenomenon as it is technological. Technically, available evidence suggests that middle-sized farmers ($100,000 to $500,000 gross sales) should be able to compete and survive. Where they lack competitiveness is in the areas of pecuniary economies in marketing, input procurement, risk management, and financial management (Smith et al.). These are areas

where agricultural economists hold the keys for success.

Aggressive, in-depth educational programs designed for middle-sized farm operations are needed if these units are to have a chance of surviving. Extension has not done the job in any of these areas. While extension can claim extensive efforts in the futures market, few middle-sized farm operations use this tool. Now the options market adds to the complexities. One of the important tools for dealing with the inability to realize pecuniary economies is the cooperative form of business organization. Yet, the quantity of resources devoted to cooperatives is declining. This trend ties back to the profession's lack of expertise in business management, marketing, and financial management. The complexities of modern regional cooperatives are simply not understood. How can the profession then expect to serve their needs?

CHALLENGES TO SAEA

Many serious concerns for the profession arise out of a discussion of this type. The SAEA must take the leadership in addressing these concerns as a first priority. Other concerns such as obtaining visibility for the profession take a back seat. If the profession is doing its job in the South, it will be visible, relevant, and rewarded.

Defining Clientele and Role

The SAEA cannot be everything to everybody. It has to first decide *who* it is serving in *what* capacity or role. When the SAEA was formed, there was a perception that it was not only designed to provide a forum for interchange among researchers in the South, but was to address the unique problems of the South (an applied orientation). Consistent with this perception, the SAEA was to seek a unique balance between serving the needs of research, teaching, and extension. The very existence of this set of papers suggests that there are questions regarding whether SAEA is effectively serving these perceived needs.

The clientele of SAEA should be all professional agricultural economists whether in teaching, research, or extension. Whether deserved or not, the SAEA is now viewed mainly as a research organization. Yet, most of the articles in the *SJAE* are applied. Maybe the SAEA is simply not communicating what it is to the profession.

The token answer to the clientele issue is to create extension or teaching sessions at the annual meeting. That is like solving the 1890 issue by creating a separate black SAEA. Extension and teaching scientists should be involved directly in the substance of the program, maybe in each major session.

The SAEA should become directly involved in helping to plan major association meetings. A classic example is the Beltwide Cotton Conference. This is a conference where the whole industry is involved. It has a southern and western orientation. Why not get together with the WAEA and the National Cotton Conference in planning at least one session at the Beltwide Conference?

As indicated previously, the main role of the profession is as an aid in decisionmaking and technology transfer. The orientation of the SAEA should be toward the usefulness of the end product. That is, does it increase the productivity of the food system or help in solving economic problems?

Does this eliminate basic agricultural economics research? In an applied science, the term basic research has a nebulous meaning. Every individual has an obligation to justify his existence in terms of some issue or problem that has implications for either technology transfer or decisionmaking.

Professional Training

The SAEA has an important role to play in professional development and training. The professional meetings should be oriented toward issues that are on the "cutting-edge" in teaching, extension, and research. They cannot, in themselves, be expected to provide the in-depth treatment of broader, complex, new issues or areas.

The SAEA should consider following the model of the AAEA in developing in-depth staff training workshops. Some of these might be in association with the work of regional research or extension projects. The SAEA could legitimize opening up these meetings to research, teaching, and extension personnel.

Such workshops could be more problem-solving oriented than the AAEA topic orientation. Some current needs might involve: helping the midsized farm survive from a production, marketing, and/or management

perspective; the needs of modern agribusiness management; contemporary demand and supply elasticity estimates and their implications for policy and trade; and evolving biotechnologies in agriculture and the economic implications.

Facilitating Communication and Education

The profession has become quite inefficient in developing educational materials. Each university has had an increasing tendency to develop its own materials. Part of this tendency is probably built into the publication reward system.

The SAEA should play a key role in facilitating the establishment of groups designed exclusively for educational materials development. The product of such efforts could be a considerably higher quality than that of extension committees. The reason lies in the interaction of researchers with extension specialists. It is interesting to note that some of the most effective extension educational development programs were the product of both researchers and extension personnel (Guither, Christainsen). Such efforts should also involve economists from the business community, at least in the planning stage.

CONCLUDING REMARKS

The agricultural economics profession and the System face significant challenges. The future of the agricultural research system as it is known today is by no means assured. Particular regional competitive problems confront southern universities not having sufficient resources to compete in the bio- and information technology era.

Adjustment to change has not been sufficiently rapid. Overt resistance to change has been a characteristic of extension in particular. On the research side, adjustment has occurred but probably in the direction of irrelevance. This is not a particularly pleasing situation. On the extension side, structural and program adjustments will be required to facilitate transfer of relevant technology on a timely basis.

The SAEA bears responsibility for fostering at least a portion of these conditions. It can, with sufficient will, change the course of events. But, that will require bold leadership.

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