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EXTENSION PROGRAM DELIVERY-PAST, PRESENT AND FUTURE: AN OVERVIEW

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The 1914 Smith-Lever Act which launched extension education has been amended frequently and was rewritten in 1953. However, its statement of basic purpose has remained the same: "To aid the diffusion among the people of the United States useful and practical information on the subjects relating to agricultural and home economics and to encourage the application of the same." An underlying though unstated purpose of this diffusion of information was to help bring about changes in behavior and in the economic and social environment designed to promote well being. In other words, the extension purpose is to foster change in society -- i.e., change by individuals, households, firms, and governments.

Development of Extension Delivery Methods

The land grant university and the extension service were distinctive American inventions (Chin and Benne). Extension was launched to deliver new applied knowledge to farm and rural people in the United States, and to transmit their interests to the land grant university research community. That linkage continues to be the role of extension education, though significant changes in the audiences and environment in which extension operates continue.

The extension delivery methods adopted following the passage of the Smith-Lever Act relied on an approach whereby the learner observes a demonstration or tries out an activity. According to Baker, the demonstration form of education was developed by Dr. Seaman A. Knapp of the USDA Bureau of Plant Industry, who established the first farm demonstration at Terrell, Texas in 1903. Knapp believed that though farmers would not apply methods successfully used in research, they would

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readily follow successful operations of a neighboring farm. Other demonstration programs were developed in Texas, Louisiana, and Arkansas in the early 1900's. The first county agent position was established in Smith Co., Texas in 1906. Simultaneously, the northern states instituted county demonstration work based on farm management surveys to discover the practices of successful farmers. While Knapp distrusted college professors, the northern states' county demonstration agents were mostly college trained and worked in close cooperation with the state colleges and farm organizations.

Thus, while different philosophies about extension program delivery methods existed even before the passage of the Smith-Lever Act, the demonstration approach was widely adopted. It did not have a systematic teaching focus, but rather one of learning by the farmer observing a situation similar to his own.

Extension Delivery Today

In its early history cooperative extension's role appeared straight forward and limited. Extension was the organization best equipped to attack informal educational problems of production agriculture and rural living. There was a close interrelationship of farmers and rural residents with extension.

Changing Extension Role in Traditional Areas

Since the introduction of extension, there have been dramatic changes in agricultural production, agricultural marketing, and the rural communities which extension serves. Concurrent with increasing productivity, structural changes throughout the farm production, food processing, and

marketing system have changed the role of extension in farmer's production and marketing decisions.

Production supply firms and agricultural cooperatives provide field men who help farmers with technical information that in earlier days had come primarily or exclusively through extension agents from land grant university research findings. An increasing number of agricultural consultants provide similar services. The input supply companies have done additional research, often drawing upon the basic research done at the university. They develop new products and are in the forefront of knowledge about actual farm application. While this has not completely eliminated the role of county agents, it has certainly supplemented and partially replaced them.

As the agricultural marketing system evolved over time, most central wholesale markets which received products shipped from long distances have been replaced. Now chain store buyers and food processing firms have buying representatives dealing directly with farmers, feedlots, etc. or buying through local country auctions. An increasing contact between representatives of the purchasing entity and the producers is the result. Thus, the role of extension marketing has shifted more to helping farmers develop overall marketing strategies and providing educational programs related to marketing institutions and policy. That activity has become much more important in recent years with changes in government programs and the opening up of world trade in major commodities, with consequent fluctuation in prices.

New Subject Matter and Clientele

Hildreth has pointed out some of the changes faced by extension in recent years. Extension is no longer confined to agriculture and rural life. Expertise to deal effectively with the problem incurred in the new areas isn't always available on the campuses of land grant universities and demands a multi-college approach and cooperation with off-campus resources. Extension is not the sole provider of educational programs in the new fields, and in some, may be a relatively minor participant; e.g., urban youth and community resource development activities.

Serving the new areas and audiences has created stresses on extension. First, sufficiently increased resources have often not accompanied the new demands. Shifting resources from established programs has been painful to many of extension's traditional clients who jealously guard "their" programs. Second, the diversity of the clients for traditional programs has increased a great deal. Hobby farmers, part-time farmers, small farmers, subsistence farmers, and commercial farmers may all need farm management programs — but of varying characteristics. Third, delivery mechanisms such as meetings and publications are less useful for the new audiences which include persons with low education and income levels, just as they were not useful when most farmers had low education and income. And competing time demands, more glamorous delivery mechanisms, and audience heterogeneity make them less effective. Fourth, topics for educational programs that were once innocuous may now be quite controversial. For example, the use of insecticides as a means of increasing productivity may be questioned by

organic gardeners and farmers, or a policy to increase farm income may be questioned by consumer groups.

Changing Delivery Methods

While the major principles of extension programming -- involving students in program development, presenting education in an informal setting, and focusing on practical information -- remain the same, some new delivery techniques have developed.

For example, a variety of communications devices are being used. Telephone messages accessed by toll-free telephone lines provide cost-effective delivery for relatively simple practices. And there is growing use of computers, video tapes, and electronic networks, some interactive.

Some very productive delivery methods have evolved using salaried aides and volunteer agents. Salaried aides from the local community have been successfully used to deliver nutrition education to low income families and small farm programs. The idea of volunteer leaders developed in 4-H programs has been applied in using master gardeners to deliver information about gardening, primarily to urban audiences. These lower paid personnel, locally based to reduce travel costs, greatly expand extension's delivery capability for the same budget.

The identification and education of community leaders is used widely in community resource development extension programs. The pilot leadership development programs supported by the Kellogg Foundation have demonstrated their worth and are spreading among the states. Extension Homemakers organized at national, state and county levels provide leadership

development. A Kellogg funded program is currently developing public policy education program delivery capability through Extension Homemakers in the western states. The 4-H and Homemakers organizations, sponsored by Cooperative Extension, develop leadership through volunteer educational and service projects benefiting the members and community. These volunteer programs expand extension's delivery capability without the direct cost of funding salaries for program delivery.

Another set of organizations which enhance program delivery capability are farm management associations employing paid field staff to deliver farm management programs.

Effectiveness of Extension

Given the changes and pressures, it is appropriate to look at what evidence exists about the value of extension in meeting the needs of today's society. If value can be measured in terms of the effect of extension on agricultural productivity, there are several recent economic studies that may shed some light. Generally these studies combine research and extension, and have found that the USDA and land grant university research and extension efforts have made a major contribution to the rate of technical change in agriculture.

Most studies place the internal rate of return in the U.S. between 25 and 50% to investments in research and education (Sim and Gardner). Araji estimated the internal rates of return for research investment in the western region related to selected commodities. His analysis identified over 50% of the results as being associated with input from extension. Peterson and Hayami suggest that the public investments in

research and extension are responsible for as much growth in American agriculture as are changes in the quality of inputs and economies of scale in farm production. The 1980 evaluation of extension cites Evenson's statement that the public sector of agricultural research and extension and the level of education of farmers together may account for nearly 50% of agricultural productivity increase between 1948 and 1979 (USDA). Huffman recently estimated productivity differences on black and white operator farms in four southern states from 1964 data, when two separate extension services existed. He concluded that much of the lower productivity for black farmers was explained by the lower level schooling and extension education available to them compared to white farmers.

So, if the methodological approaches of the studies cited are accepted, a minimum conclusion is that there is a positive, relatively high rate of return to society's investment in research and extension dealing with agricultural production and marketing. The studies cited above suggest that extension education is a good investment, but they do not give much insight into the possibilities for improving the value of extension through changes in program delivery.

Extension Delivery Tomorrow

What needs to be taken into account in thinking about assuring meaningful extension delivery for the future? And what changes are needed to keep extension delivery viable, efficient, and progressive? These are difficult but important questions which are only introduced in the following sections.

Implications of the Changing Farm Typology

The best known characteristics of the farm sector are that the average

farm size has increased and the total number of farms has declined. An ESCS study projects that by the year 2000 farms will probably be arranged in a bimodal distribution with a large proportion of small farms, ever increasing proportion of large farms, and a declining proportion of medium size farms. (Lin, Koffman and Penn) The implications for extension programs of this bimodal distribution are very significant. The traditional audience for extension programming comes from the middle size farmers who are not so large that they use direct access to researchers to obtain information. Extension has had a difficult time directly reaching the small and part-time farmers, the most numerous category.

The phenomena of the large or knowledgeable farmers obtaining information directly from experiment stations and other scientific sources rather than from county extension agents is described by Havelock and Benne as "by-pass". Extension must either better prepare itself to deal on a timely and informative basis with the large or knowledgeable producers, or, recognize that theirs is a minor role with that segment of agricultural producers and concentrate on the remaining segments of the producers.

The latter option is embraced by the recent ESCOP report which proposed as a strategy for public research and extension: Scale neutral research and extension should be emphasized; special measures should be developed to help the moderate size farm through programs dealing with financial, marketing, and production management; and an overall package of assistance, especially in dealing with problems of poverty and underemployment, should be provided to assist those associated with small farms.

Improving Extension Delivery Efficiency

Adjustments will be necessary to maintain a clientele among farmers. But other changes are also called for if extension is to weather the increasing demands for accountability. Boone argues that funding for educational programs is positively related to demonstrated efficiency and effectiveness. Rather than following the same objectives and methods year after year, extension must build in system renewal processes to remain a viable educational force.

Extension is facing increasing demands for improved efficiency of program delivery from both the input and output sides of the extension production function. Increasing amounts of knowledge to be extended, transportation costs and personnel costs are forces from the input side. The growing complexity of decision making in agriculture, the growing specialization of agriculture and policy development are forces from the output side.

Siegfried and Fels, reviewing research in teaching college economics, report that programmed instruction can accomplish economics learning in a shorter length of time and self-pacing of learning has a significant contribution to make to economics education. While the results above are for the classroom, programmed instruction and self-pacing of learning may work better for extension programs with more highly motivated participants than for classroom students.

This brief analysis leads to consideration of certain alternatives for the improvement of extension programming efficiency. The selection of audiences with higher human capital for a given extension program could lead to efficiency gains. This could be accomplished by better targeting

programs to specific clientele groups that would consist of individuals with a better knowledge background at the start. The use of extension teachers with higher human capital could also lead to efficiency gains. This can be achieved through increased training of field staff or the use of more specialists, a point to be discussed later. There are a number of opportunities to improve utilization rates of both faculty and clients. These run a gambit including group meetings as opposed to individual consultations, use of mass media, and electronic transmission of information.

Increasing Extension Specialization

The changing clientele for extension and the increasingly technical knowledge to be delivered to them may call for more specialization. But the likelihood of significant expansion of state specialist ranks is slim. However, there are other ways of developing specialists that may be cost efficient for the extension system.

The development of national or regional specialists offers some potential. The rural crime center at Ohio State is essentially serving the role of a U.S. specialist. Several proposals have been brought forward in the past couple of years for development of a regional or national specialist in transportation economics. The Western Livestock Marketing Project performs a specialist function for the entire western U.S., with some spillover into other regions.

The many issues and concerns which cross state and even regional boundaries argue for additional regional or national specialists. Developing programs using regional specialists would enhance the work in computer

applications to farm management and marketing and using computer networks as transmitters of timely information. The recent work in electronic marketing has the potential to go well beyond state boundaries in some cases. Joint funding of such regional or national specialists would be a much more efficient delivery method than having personnel who are not familiar with the topic attempting to deliver educational programs related to it.

Another way of achieving cost efficient specialization might be to have local or area agents who have particular interest and expertise act as a state or even regional specialist. This may become more feasible as more highly trained individuals are available in county and area slots.

Electronic Program Delivery

The use of computers and electronic networks is growing in farm mangement and marketing programs. The technology has also been applied in CRD and public policy programs and its use will likely grow in these programs.

To realize the full potential of computers and electronic networks hardware, software must be developed and local agents trained. Cooperation among states in developing software is growing, but more is needed. Local agents can increase their output and educational capabilities by using this technology. Thus, training and involvement of agents by specialists will be productive as the use of the technology grows.

The technology creates ability to transmit large amounts of information and provide the opportunity for individual decision analysis, both exciting prospects. However, there is danger that both the client and

extension worker will overlook the use of the technology to provide learning situations. Extension cannot, nor should it seek to, maintain a monopoly on electronic delivery of information and individual decision analysis services. Extension must provide educational opportunities utilizing electronic delivery to allow its clientele to better utilize the information and analysis capacity of computers and electronic networks.

Implications for Extension Economists

The above discussion leads to some speculation about the implications for agricultural economists conducting extension education programs in coming years. Decisions and events off the farm may be more important than decisions and events on the farm in terms of their impact on the well-being of farmers and consumers. Public policy and community resource development are not only important for main street businesses, consumers and rural residents, but also for farmers (Wise). On-farm decisions are also important for non-farm people. How can economists in extension develop a strategy for program development and delivery for the wide range of students who want and need their educational services?

Agricultural economists have a role to play not only in the production and marketing of food and agricultural products, but also in activities related to concerns about food and agricultural policy, community development, rural government finance, conservation, environmental and water policy, transportation, etc. It will be important for extension programs developed by agricultural economists to focus ahead to anticipate expected changes in the composition and structure of the agricultural production sector, the agricultural marketing sector, consumer interests, and concerns

of rural communities, community leaders and other institutions dealing with food, agricultural and rural communities.

Extension is a linkage between research and the users of knowledge. Traffic flows both ways over the linkage. The extension professional, thus needs to be able to adapt the new knowledge developed by research to the educational needs of the user, as well as communicate the needs of the user for new knowledge to the researcher. The scholarship requirements to achieve these tasks are large. The extension professional often needs to be able to touch the abstract and the concrete in the same flight of thought. In many ways, more scholarship is required than to develop new knowledge. The economist working in extension cannot be divorced from new developments in economics any more than from new developments in farming, marketing or public policy. The extension professional must take an active role in AAEA, just as he must maintain his contacts with the managers of the firms or organizations who constitute his students.

The challenges presented to extension by changing clientele, program needs, and delivery innovations must be dealt within a mode of increasing efficiency. Creativity and imagination are needed to be an economist filling the role of an agent of change through extension education where the needs will continue growing faster than funds.

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Footnote

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