

Comprehensive Extension System—The Land-grant Example

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From colonial times to the present, America has prized education as the provider of individual opportunity, as well as our national progress. The value of practical education was delineated clearly with the passage of the Land-grant "Morrill Act" by the U.S. Congress, signed by Abraham Lincoln in 1862. The Land-grant Act provided grants of federal land to every state that agreed to establish at least one college to teach agriculture and the mechanic arts along with other scientific and classical subjects. This and subsequent legislation to support research and extension developed the "trilogy of American ingenuity"—the blended roles of teaching, research, and public service that form both the mission and strength of America's land-grant universities.

Cooperative Extension, officially established in 1914 with the passage of the Smith-Lever Act, was designed as a partnership of the USDA and the land-grant colleges and universities. State legislation enabled local governments or organized groups in the nation's counties to become a third legal partner in this new educational endeavor.

Today, this educational system includes professionals in each of America's 1862 land-grant institutions, in the Tuskegee Institute and sixteen 1890 land-grant institutions, and in Puerto Rico, the Virgin Islands, Guam, American Samoa, Micronesia, and the District of Columbia. Cooperative Extension also includes professional staff in nearly all of the nation's 3150 counties plus thousands of paraprofessional staff and nearly 1.5 million volunteer leaders to assist in extending the programs. At the national level, the federal partnership includes an extension administrative group of about 100 professionals within the USDA. These people direct federal fund allocation, coordinate national initiatives, provide program leadership, and facilitate linkages to the USDA and Congress.

Cooperative Extension's job is to transmit practical information produced by research centers and universities to the public. Its aim is to help people identify and solve problems, primarily at the local level. Its mission is better agriculture, better homes, and better communities.

Cooperative Extension's major program areas and aims are:

a) *Agriculture*, to provide information to farmers and agribusinesses that will help them strengthen U.S. agriculture through efficiencies in production, marketing, and distribution, thus assuring an abundant and safe supply of food and fiber for American consumers and for export.

b) *Natural Resources*, to enhance the ability of individuals and groups to make decisions for wise use and management of the nation's natural resources while ensuring a protected environment for an improved quality of life for all citizens.

c) *Home Economics*, to aid in strengthening the institutions of home and family.

d) *4-H Youth*, to strengthen the development of individual life, skills, attitudes, and values of leadership among the nation's youth.

e) *Community Development*, to strengthen the capabilities of individual communities and state and local governments in order that they may deal more effectively with public policy issues and local needs or problems.

f) *International concerns*, to assist in the development of understanding of national and international issues and in the transfer of the research/extension concept to developing countries.

HISTORY AND DEVELOPMENT OF COOPERATIVE EXTENSION

The genesis of extension in the United States predated the Smith-Lever Act by more than a century. The early leaders of this nation

recognized the importance of practical education on the farm and in the home. Benjamin Franklin organized the American Philosophical Society in Philadelphia in 1769 to discuss such subjects as newly discovered plants, herbs, trees, roots, methods of propagation, and improvement of fruit juices (6). Both George Washington and Thomas Jefferson kept detailed records of their farm and garden activities and shared them with neighbors (6).

As the early settlers pushed the frontier of America ever westward, those frontier farmers had to learn how to grow crops on the new land while their wives learned to use and preserve those crops and to beautify their homes with flowers and shrubs. Practical science on control of insects, diseases, propagation, fertilization, and food preparation and preservation became a necessary part of that knowledge.

In 1838, the first Iowa Territorial Legislature passed an act providing for the incorporation of agricultural societies "to encourage and help farmers solve their problems through discussions, competitive exhibits, and the wide dissemination of known agricultural information" (1). This 1838 act was the beginning of several legislative acts to encourage "on-the-job" education in the science and art of agriculture. Horticultural societies in Iowa and many other states were among those initial agricultural societies. The need for science education in agriculture was recognized as early as 1847, when the Sheffield School at Yale was established for "science in agriculture". Agricultural colleges were established in Michigan and Pennsylvania in 1855—now Michigan State Univ. and Pennsylvania State Univ., respectively. These events, of course, predated the formal establishment of land-grant colleges.

During and following the American Civil War, Iowa Agricultural College and several other emerging state land-grant colleges conducted Farmer Institutes (1). Thus, a principle was established of helping people to help themselves that has prevailed in subsequent extension work. These informal Farmer Institutes were followed by formalized laws, such as one passed in 1906 in Iowa that established an agricultural extension law that included institutes and demonstrations on crop growing, livestock raising, domestic science, and other agricultural and home science programs (1).

During the same year of the Morrill Act, the Federal Congress also established the USDA and passed the Homestead and Railway Acts, which opened endless acres to the plow and provided easier access to those acres for the hordes of new immigrants. Between 1840 and 1900, more than 18 million immigrants swelled the U.S. population, many of whom moved onto the land.

Prior to the passage of the Smith-Lever Act in 1914, many national leaders were highly supportive of new concepts in extension-type education. For example, Theodore Roosevelt, speaking on Michigan State Univ.'s campus in 1907, urged land-grant colleges to carry their educational programs off campus by teaching farmers through demonstrations on their farms (7).

Out of the principles of that address grew Roosevelt's Country Life Commission, with Liberty Hyde Bailey as chairman. That commission's report added impetus to the founding of the extension service. During Roosevelt's Michigan State Univ. address, he also said, "The best crop is a crop of children. The best products of the farm are the men and women raised thereon" (7).

Director Baldwin of Michigan State Univ. said in 1932 that "perhaps the greatest achievement of the Extension Service has been in helping people to discover their own talents for learning and leadership and to cultivate in them the confidence and courage so greatly needed in both times of plenty and times of stress". He cited some new, broadened objectives of extension, including child care, family adjustment, 4-H rural school music, dramatics, and mobilizing

community sentiment in favor of better living as well as better farming (7).

Extension opportunities came faster than staff growth; thus, training community leaders became an important function of extension. For example, in Michigan, it became impossible to handle the 20,000 children enrolled in 4-H programs without 1500 volunteer club leaders. Also, in Michigan, a relay system was developed in 1924 whereby 12 women attended school 1 day a month. In turn, each relayed her learning to a group of at least nine women in her neighborhood. One demonstration by an extension specialist thus reached 100 families (7).

This relay method was introduced into poultry extension in Michigan by extension specialist J.A. Hannah, whereby 20 or more poultrymen received lessons on disease control and flock culling. After the second lesson, they culled their neighbor's flock and, after the third, the individual poultrymen conducted culling demonstrations (7). Perhaps this was the genesis of the Master Gardener program, which has been so successful in horticulture. Hannah later became a dynamic president of Michigan State Univ.

Families who built homes along rural roads created a new responsibility for the extension service as they encountered problems long-familiar to farmers. They needed pure water supplies and safe septic tanks; they were interested in community betterment; their fruit trees needed spraying; they wanted "fertility" analyses of their soils; they needed information on home canning and freezing; their children enrolled in 4-H to raise livestock and grow gardens. Soon the demand from urban families for similar guidance occurred. The result was home demonstration and 4-H agents assigned to the city (7).

CURRENT STRUCTURE AND ORGANIZATION

As indicated previously, cooperative extension's major mission is to provide public education programs in the areas of agriculture, natural resources, home economics, youth development, community resource development, and international programs. These general program areas have been subdivided further into programs priorities on a national, regional, state, and local basis. The priorities obviously vary by region and state, and even in local countries or communities. A recent national assessment of cooperative extension indicates that agricultural and natural resources account for 36% of program time (9), followed by home economics with 32%, 4-H youth with 26%, and community development with 6% (Table 1). This extension effort has been conducted by nearly 17,000 professional extension workers, two-thirds of whom are in countries as county or area agents. There are about 3700 subject matter specialists on land-grant campuses and in regional centers (Table 2).

Extension funding from all sources totals about 1 billion dollars annually. The federal input is currently 32%, state 47%, local and county 18%, and private sources 3% (4). Over time, particularly in recent years, the federal portion has decreased substantially while the state governments have provided increased funding (Table 3).

HOW EXTENSION WORKS

The cooperative extension system disseminates and encourages the application of research-generated knowledge and leadership techniques to individuals, families, and communities. It is an integrated partnership with federal, state, and county involvement, coordinated with research and the private sector. In the United States, extension's purpose is education, not regulation or pricing; thus, cooperative extension in the states is attached administratively to

Table 1. Distribution of staff time by program area, 1982 (ref. 9, table 1.3, p. 12)

Program	Staff years	Percent
Agriculture	7,975	36
Home economics	7,166	32
4-H/Youth	5,856	26
Community development	1,414	6
Total	23,348	100

Table 2. Distribution of staff by type of position, 1982 (ref. 9, table 1.2, p. 11)

Type of position	Number	Percent
Federal	116	1
State staff		
Subject matter specialists	3,706	22
Other	507	3
County and area staff		
County agents	11,204	67
Area agents	629	3
Other	651	4
Total	16,849	100

Table 3. Sources of extension funding by year—percent (ref. 9, table 1.3, p. 15)

Year	Federal	State	County
1940	59	21	20
1950	46	32	23
1960	37	38	23
1970	39	41	20
1980	36	44	20

the 1862 and 1890 land-grant institutions rather than to state or federal government, as may be the pattern in other countries.

Extension provides informal, noncredit education conducted primarily beyond the formal classroom and for all ages. It is practical, problem-centered, and situation-based. Cooperative extension education begins with helping people to identify and understand their needs and problems and to use new technology or information in solving them. This educational process involves a free flow of communications among research, extension, and resident teaching functions of the state university system along with the resources of the USDA and other departments or agencies, public and private. Extension functions as a nationwide educational network through local offices in counties, which are semi-autonomous units accessible to and subject to influence by local citizens. Extension is a professional organization staffed by college-trained personnel specifically qualified for their position.

THE SUCCESS OF EXTENSION

A 1984 study by Warner and Christensen (9) showed that 87% of U.S. citizens were aware of extension programs, with 4-H programs having the highest visibility. Also, 27% of the households in the United States have used extension services sometime in their lives, and more than 90% of the persons who have used the cooperative extension service were satisfied with services received, compared with 69% satisfaction for most government agencies.

R. Evenson, Economics Growth Center, Yale Univ., speaking to a 1985 executive seminar of extension directors, reported research showing rates of economic return for extension approximating those for agricultural research. His research has also shown that extension is more productive when working with better-educated farmers and that effectiveness and use of research increases when extension information increases. Concomitantly, the higher the level or research, the more productive is extension.

Even though there is ample evidence that extension has been highly effective as a major educational force in the productive development of American agriculture, homes, and communities, there is much concern about the ability of extension to do as well in the future as it has in the past.

WHAT IS THE FUTURE FOR EXTENSION

Both agriculture and rural America are undergoing change, perhaps greater than any experienced since the settlement days of this country. R. Delano, former president of the American Farm Bureau Federation, speaking to the previously mentioned extension directors seminar, said "agriculture is in a non-voluntary restructuring in which we will have less grain, less beef, less pork, but more

fruit, vegetables, landscaping, exotic and high value commodities.” He further indicated that “work on farms of the future will be done by more young people, more women, and more old folks; the computer will be as essential as the tractor is now; and if extension is to lead, it must change its emphasis, training and programs.”

D.I. Padberg, as well as other economists, have indicated that American farming is developing into a three-tiered structure with megafarms, moderate-sized farms, and small farms, where the major farmers will have a doubling or tripling of asset value by 1995 (8). At that time, perhaps one-half of all farms will be hobby farms. Many of these farms will be owned by professional persons wishing to regain contact with the “rural lifestyle”, perhaps presenting a greater opportunity for horticultural commodities as a “quality of life factor”.

A number of rural sociologists, including D.A. Dillman, Washington State Univ., have indicated that rural America has gone through a succession of stages and is now dominated by a new age of information (2). Dillman has suggested that the U.S. rural community was once a geographic place where people could, and typically did, go about the rounds of their daily lives having all, or nearly all, of their needs met in the community. Most people’s lives were pretty much confined to the community in which they lived, and it was a powerful controlling force in their lives. To a certain degree, the county agent was one of the kings of those communities.

Community control was essentially lost in the mid-twentieth century because of automobiles, paved roads, telephone, television, unprecedented travel opportunities, a rise in national corporations, the spread of franchise businesses, the expansion of educational opportunities, and the general emphasis on the building of ever larger bureaucracies from corporations to social service agencies. Communities were opened to outside influences, and extension needs and programs were directed more towards organization and broad society issues or groups, often extending across local, state, and even national boundaries (2).

According to Dillman, we are now experiencing an astonishing revolution in our ability to organize, store, retrieve, and transmit information. The essence of the information age is a massive increase in the speed by which communications may occur between one place and another, the amount of information that can be transmitted, the fidelity of long-distance communications, the ability to select from data banks, and the rate of potential change. These and many other factors will impact all elements of society, but particularly the educational efforts thereto. These changes might mean, for example, that local apple producers in any given state will have less contact with one another than each will have individually with other apple producers across the United States or even throughout the world.

All of these changes have profound meaning for the future of extension. We can no longer assume that past or current methods of staffing or programming are appropriate for the future. P.J. Borich, director of cooperative extension, Univ. of Minnesota, speaking at the 1985 extension directors seminar, indicated current staffing is based partly on the tradition of the 1920’s and the happenstance of funding and vacancies at a given time. Our delivery process is still primarily one-to-one conversations and meetings. Both the staffing and the delivery process, according to Borich, inevitably must be better targeted to clientele. They must be based on program emphasis with extension as education leaders. Somehow, we must disregard accidental political boundaries (counties and perhaps states). We must seek alternative delivery systems and our staffing patterns must be flexible, perhaps including short-term assignments and consultancies.

INTERNATIONAL MISSION OF EXTENSIONS

Since the end of World War II, economic and development assistance to less-developed countries has been an integral part of U.S. foreign policy. The current U.S. assistance effort is administered by the United States Agency for International Development (USAID). Most USAID programming has stressed agriculture and rural development. Current assistance is in four primary categories: (a) agriculture and food; (b) population, nutrition, and health; (c) rural development; and (d) public administration and policy.

The U.S. land-grant institutions have been a major source of contractual help to U.S. developmental assistance programs. When the United States embarked on its initial program in 1949, its university system was the first group approached by the U.S. government for contracting assistance. By the end of 1952, eight land-grant universities had been given major responsibilities for agricultural and rural development programs in various nations of the world. Now about 50 institutions are involved in various USAID international activities (10).

Technical assistance activities were conducted far from the home campus, which added many complications and difficult resolutions. There were some failures, but also successes. However, from that relationship a system has evolved that is becoming increasingly effective, although it is still not free of operational problems. Because of their agrarian background, U.S. land-grant universities have a special potential to help developing nations. In addition, the complementary elements of research, teaching, and extension of the land-grant institutions have added a special dimension to these assistance activities. From the beginning, extension personnel have been involved in foreign assistance activities; and the need for university faculty, both research and extension, will continue to be critical for any successes.

The importance of international involvement by extension personnel was reiterated in 1984 by an Extension system policy statement that specifies that Extension’s international mission shall be (a) assisting developing nations in support of U.S. government policy; (b) broadening the experience base and enhancing the professional capabilities of U.S. extension personnel; (c) improving the ability of the Cooperative Extension Service to explain and interpret the global market and its effects on U.S. agriculture; and (d) providing creative leadership and innovative techniques to increase the adoption of relevant technologies (3).

Extension recognizes the enormous challenge of feeding an ever-growing population with expanded expectations not only for adequate food but also for variety and quality. The extension system in cooperation with the National Assn. of State Universities and Land-grant Colleges (NASULGC) recently established a special project on “United States and World Agricultural Development.” Four land-grant universities (Univ. of Delaware, Michigan State Univ., Univ. of Georgia, and Utah State Univ.) were designated to develop educational materials that hopefully would enlighten the American public on the importance of U.S. involvement in international agricultural development.

These activities have resulted in a series of seminars and studies from which a number of visual materials and publications have been developed. A new publication, “Solving World Hunger: the U.S. Stake” (10), provides in-depth coverage of the past, present, and probable future of the role of the United States in world agricultural development. It details some of the complications and frustrations faced by extension and other land-grant personnel in the international arena. Hopefully, it will improve understanding both in the United States and abroad concerning the vital role of the Cooperative Extension System in international activities.

In Nov. 1985, a number of U.S. extension administrators were involved in the Ninth Working Conference for Directors of Agricultural Advisory Services at a meeting of the Organization for Economic Cooperation and Development (OECD) in Paris, France. As indicated at that conference by G. Guyer, Michigan State Univ., extension in the United States has a leadership base and an experience level in technology transfer that is vitally important in international agricultural development programs (5). There always must be considerable flexibility and innovation if programs are to work in the individual setting of any nation or community; but, with the knowledge system and experience base, U.S. extension workers are both qualified and willing to continue being involved in international extension education.

In summary, it seems to me that the future of extension, whether at home or abroad must be tied to four basic needs.

a) Have a reservoir of well-trained, highly qualified professionals with substantial extension experience.

b) Be fully coordinated with a strong research base. Extension can be effective only if new research knowledge is available, easily accessible, and usable.

c) Work with an informed clientele. Statistics have shown that the higher the educational level of the clientele, the greater the impact and use of research-based education.

d) Be flexible and "visionary" in the use and acceptance of new technology, particularly in communication and exchange of information.

Even though U.S. extension is being tried, tested, and perhaps persecuted by excessive budget reductions, there is little doubt that it will continue as a strong, vital, and dynamic organization in education and technology transfer. In the final analyses, not only do our traditional clients in the United States have a vital stake in a strong U.S. extension system, but also the continued ability of the United States to provide appropriate agricultural and rural development assistance to other parts of the world will be substantially dependent on the strength of the U.S. land-grant extension system.

Literature Cited

1. Bliss, R.K. 1960. History of cooperative agricultural and home economics extension in Iowa. Iowa State Univ. Press, Ames.

2. Dillman, D.A. 1985. The social impacts of information technologies in rural North America. *Rural Soc.* 50(1):1-26.
3. Extension Service, USDA. 1984. The international mission of the cooperative extension service—a statement of policy. January.
4. Extension Service, USDA. 1986. Extension resources fact sheet. February.
5. Guyer, E. 1985. National and international cooperation: a renaissance in international development education. Proc. of IX Working Conf. for Directors of Agr. Advisory Serv. Org. for Eco. Coop. and Dev. (OECD). Paris, 4-8 Nov. 1985.
6. Hedrick, U.P. 1950. A history of horticulture in America. Oxford Univ. Press, New York.
7. Kuhn, M. 1955. Michigan State University—The first hundred years. Michigan State Univ. Press, East Lansing.
8. Padberg, D.I. and H.L. Goodwin. 1985. Structure of agricultural production. Extension executive seminar—perspectives for the future. Washington, D.C. 16-20 Sept. 1985.
9. Warner, P.D. and J.A. Christensen, 1984. The cooperative extension service—A national assessment. Westview, Boulder, Colo.
10. Wennergren, E.B., W. Furlong, and J. Joshi. 1986. Solving world hunger: The U.S. stake. CICHE Publ. Seven Locks Press, Cabin John, Md.

Extension and Technological Transfer: The Need for an Alternative

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The focus of this paper is the Third World and the changes in thinking on the concept and practice of extension that have emerged over the past decade. Given the fact that the majority of the population of Third World countries in the three continents Asia, Africa, and the Americas continue to depend on some form of agricultural production for a livelihood, extension continues to play a dominant role in agricultural development. Indeed, it could be argued that agricultural extension is the fundamental instrument of agricultural development in most Third World countries and that any failing to achieve this development should be laid at the door of extension services. Most Third World countries have some form of agricultural extension service, and these services are the constant attention of academics and professionals who seek to improve their delivery; yet, improvement in this delivery seems despairingly to elude us. Few will deny the commitment to agricultural extension, the potential in terms of the production of technology that is continually generated, or the professional expertise that guides and directs the delivery, but unquestionably all of this seems to have little impact on the miserable livelihoods of the vast majority. The World Bank more euphemistically concludes that the economic achievements of the past decade or so do not seem to have led to a better standard of living for the vast majority of poor people in the Third World. (23)

RETHINKING DEVELOPMENT

Where and how is extension going wrong? What explains the incongruence between expertise and technology on the one hand and continuing and worsening rural poverty in the Third World on the other? In the first instance, it could be argued that the "winds of change", in terms of radical re-appraisal of the causes of this poverty, have yet to blow on formal government extension services. Indeed, as we examine their reasoning in official documents and their practices, we could conclude that they carry on with their business seemingly oblivious to the emerging analysis around them. Extension is an instrument of development and, as such, changes in our thinking on development will influence the practice of extension. The problem is that formal extension services, ostrich-like, have their heads in the sand and seem oblivious to different lines of thought. The irony is that extension services, which themselves

seek to overcome farmers' resistance to change, are themselves resistant to approaches to extension practice that do not follow the familiar equation of research→knowledge→transfer→adoption→diffusion.

Few would disagree that since the early 1970's we have witnessed an emerging re-appraisal and re-thinking on the causes of rural poverty and, correspondingly, on appropriate strategies to tackle this poverty. The impetus came from the Latin American subcontinent, but the ideas have spread throughout the Third World, although their impact in parts of Africa is still not substantial (17). Essentially, the two schools of thought employ different patterns of analysis to explain rural underdevelopment. One school seeks to "modernize" and to bring about changes in attitudes, practices, and knowledge levels in order to help develop the backward or traditional sector (13); the other school seeks to rectify the *inequalities and imbalances*, in terms of resource allocation, which exist in rural areas and to build up the skills of the rural poor to negotiate and bargain with the forces that affect their livelihoods (10). It could be argued that, in practice, the former school seeks essentially to tackle the psychological and physical *symptoms* of the underdevelopment of a particular rural area: while the latter school seeks to tackle the structural *causes* of this underdevelopment. Proponents of both schools would, of course, argue against such limited interpretations and, in a sense, they would be right. Both schools of thought and practice are not mutually exclusive but, it can be argued, formal extension services appear to be solidly entrenched in the camp of modernization. A flavor of the ideological dichotomy between the two schools can be seen in the following two statements on rural development:

(a) "Rural development is clearly designed to increase production and raise productivity. Rural development recognizes, however, that improved food supplies and nutrition, together with basic services such as health and education, can not only directly improve the physical well-being and quality of life of the rural poor, but can also directly enhance their productivity and their ability to contribute to the national economy" (12).

(b) "Rural development is participation of people in a mutual learning experience involving themselves, their local resources, external change agents and outside resources. People cannot be de-