The Changing Role of Agricultural Extension in a Global Economy

Burton E. Swanson
Professor Emeritus of Rural Development
University of Illinois at Urbana-Champaign
452 Mumford Hall, 1301 West Gregory Drive
Urbana, IL 61801
E-mail: swansonb@uiuc.edu

Abstract

This paper outlines the elements of a decentralized, market-driven extension strategy that has been tested and proven effective in increasing the income of small- and medium-scale farm households in China and India. The impetus and development of this strategy occurred in different ways in each country, but common themes emerged in both nations. First, extension needs to shift some of its focus from food security to increasing farm income and rural employment. This change in national policy requires that extension focus more attention on increasing the production of high-value crops, livestock and other value-added enterprises. In making this policy shift, it is essential that extension become more market-driven. This requires that extension allocate more resources to identifying markets where small-scale farmers can be competitive and to assist them with learning how to build value-chains that will effectively link these farmers with markets. Another essential element is that farmers must become organized into groups to achieve economies of scale in supplying these high-value markets. These farmer organizations will become the basic building blocks of democratic institutions and will enable farmers to participate more fully in the political process. Finally, for market-driven extension systems to be effective, decision-making must be decentralized. In addition, for a decentralized extension system to be effective there must be formal stakeholder involvement in decision-making to increase accountability. It is recommended that this extension strategy be carefully considered by extension leaders in other developing countries.

Keywords: Extension, Strategy, Decentralize, Market-Driven, Social Capital, China, India

Acknowledgment: This paper was developed and refereed under special invitation from the JIAEE Editorial Board for continuation of the annual Seminal Article Series.

Editor’s Note: This paper summarizes the author’s efforts from the past 15+ years in helping transform the national agricultural extension systems in China and India. Working with extension colleagues in both countries, the author completed more than 25 trips to prepare, supervise, and evaluate major donor projects that sought to implement the strategies outlined in this paper. After observing significant changes in extension strategy and performance, the author believes that national agricultural extension systems play a vital role in alleviating rural poverty, reducing hunger, and enabling small-scale farm households in developing countries to improve their livelihoods. However, this outcome is unlikely to happen unless there is a major change in the extension strategy currently being pursued by most developing nations.
Introduction

The purpose of this paper is to outline policy issues facing national agricultural extension leaders in response to the rapid globalization of national and international food and agricultural systems. In response to these challenges, specific options being pursued by different countries are outlined for consideration and possible implementation. This paper begins by outlining the growing dominance of multi-national firms at both ends of the food chain; this phenomenon is resulting in the progressive expansion of large-scale, commercial farming worldwide. A basic assumption of this paper is that globalization is and will continue to negatively impact small- and medium-scale farmers, especially in developing countries. In the process, small- and medium-scale farmers will become increasingly marginalized, with major human and social implications.

The primary premise of this paper is that government policy makers, agricultural extension leaders and extension scholars need to consider the implications of globalization on the agricultural sector and the implications for public extension systems in developing countries. One option would be to continue focusing on the “supply-driven” extension strategy that was successful in increasing the productivity of basic food crops during the second half of the 20th century. The problem is that multi-national, life-science firms are becoming the dominant source of crop production technologies worldwide. As a result, the traditional role of public research and extension systems is rapidly becoming redundant.

Alternatively, these public extension organizations can follow the example of other countries and shift to a more market-driven strategy that focuses more directly on increasing farm income and employment, especially among small- and medium-scale farmers. This approach could have a positive economic and social impact on low-resource farm households, and at the same time, maintain political support for public research and extension systems. Given that multi-national life-science companies are rapidly replacing the traditional role of public agricultural research and extension systems, the underlying proposition is that if these national systems are going to survive, then they must refocus on getting farmers organized and on helping them increase farm income and rural employment through a new, decentralized, market-driven extension strategy.

Background

The global food system has been undergoing a major transformation over the past two or three decades, first in Europe, North America, Japan and Oceania, and more recently, in developing countries (Harl, 2000). First, large-scale, multi-national supermarket chains (e.g., Wal-Mart, Carrefour, Tesco, Ahold, and Metro) and meat processing (e.g., Tyson, Smithfield, and ConAgra) and commodity firms (e.g., Cargill, ADM, Bunge, and Zen Noh) dominate the worldwide food industry. Second, the major life-science companies (e.g., Syngenta, Monsanto, BASF, Dow, DuPont, and Bayer) dominate the input supply industry, including seed and agro-chemicals. Third, these changes at both ends of the global food supply chain are bringing about the steady commercialization of production agriculture worldwide. As a result of these changes, prices for the major food commodities are declining and these changes are having a direct, negative impact on small- and medium-scale farmers, especially those in developing countries (Fritschel, 2003).

In 2006, there were an estimated 1.32 billion farmers in developing countries, and due to the continuing increases in population growth, this number is expected to gradually expand during the foreseeable future (FAOSTAT, 2006). Most of these developing country farmers have very small farms, very limited resources and excess family labor; these farm households...
comprise the majority of the rural poor in developing countries. While cropping intensities are continuing to increase in most nations, such as China and India, unless these small- and medium-scale farmers shift to higher-value crops and/or enterprises, farm income will, at best, remain stable. However, in most cases farm income is declining as world commodity prices decrease. In addition, due to the increasing role of the private sector in supplying proprietary technologies, plus the increasing demands on national governments for health and education services, these changes can be expected to negatively impact government commitment to public agricultural research and extension systems. In many countries, because of increasing pressure to reduce government spending, the extension system is being downsized and/or most resources are being spent on staff salaries, with too few funds available to support extension programs.

Problem

Most agricultural extension leaders are still operating on the basis of the 20th century agricultural development strategy when food security was the national priority (Swanson, Samy, & Sofranko, 2003). Therefore, most national extension systems continue to focus on increasing the productivity of the major food crops (e.g., rice, wheat, maize, etc.) and other commodities, even though multi-national life-science companies are becoming the primary source of new technologies for these crops (e.g., new varieties/hybrids and agro-chemicals) worldwide. In addition, as mentioned above, due to these productivity increases, the world now has a surplus of these basic commodities and prices are falling. Also, farmers in North America, Europe and East Asia continue to receive farm subsidies and/or tariff protection, making it difficult for developing country farmers to effectively compete for these international markets. The winners in the competition for global commodity markets are the large-scale, commercial growers, who have ready access to the most productive, proprietary technologies as well as market protection. Therefore, the incomes of small- and medium-scale farmers worldwide are declining as they become increasingly marginalized within a global economy.

Purpose and Objectives

The purpose of this paper is to address the policy issues outlined above and to outline the elements of a new extension strategy that has been tested and proven effective in several countries, including China and India. The thrust of this paper is that if national agricultural extension systems in developing countries are to survive as effective institutions, they must (a) refocus on getting farmers organized (i.e., build social capital), (b) increase farm income and rural employment and (c) thereby help to alleviate rural poverty. If national extension organizations adopt these proposed policy changes and aggressively pursue this new strategy, they will not only receive increased public support, but they may also become prime candidates to receive financial support from donor agencies. On the other hand, if national agricultural research and extension organizations continue focusing on the major food crops, they will be quickly outpaced by the private sector and will be of diminished economic value to the country. As a result, these public institutions may be progressively downsized.

Major Elements of a Proposed New National Extension Strategy

Based on the experience of China, India and other countries, the following elements are proposed for consideration in developing a national agricultural extension strategy that would help meet the needs of small- and medium-scale farmers during the first two or three decades of the 21st century. Each of these proposed changes will be described in this paper, with examples being
given to illustrate each element. Also, in pursuing this new strategy, extension leaders will need to develop new areas of technical, market and social expertise, so this reorganized extension system can more effectively serve small- and medium-scale farm households throughout their country. These strategic elements follow.

**Shifting to High-Value Crops or Enterprises**

As outlined in the introduction, public extension can no longer focus its primary attention on increasing the productivity of major food staples, but must shift some of its focus to those higher-value, labor-intensive crops, or enterprises where small- and medium-scale farm households can successfully increase their incomes and/or employment, thereby improving their livelihoods. The process of identifying and evaluating potential high-value crops/products will likely differ from country to country, depending on national policy and local circumstances. In addition, the production of specific crops or products is very location specific and is highly dependent on several factors, including: agronomic conditions; access to specific domestic and international markets, including specific windows of opportunity in different markets (i.e., market timing); and the transportation and supply chain infrastructure requirements needed to supply different markets. In addition, the catalyst for change can come from the farmers themselves, private sector firms, public extension or all three groups working together in a public-private partnership (Swanson & Samy, 2004b). For example, the shift to high-value crops/products in China was very different from the approach used in India.

**China.** Following the economic reforms that started during 1979 in China, better educated, younger farmers began shifting from basic food crops to high-value crops and livestock enterprises; in the process they became known as specialized farm households (SFHs). This transition was not easy, since the average farm size was only about the equivalent of one-half acre of irrigated land/farm and each farmer was required to sell a specific amount of a staple food crop (e.g., 600 kg of wheat, rice, maize) to the government at a fixed price. Therefore, depending on the farm’s size and proximity to urban markets, some SFHs concentrated on livestock enterprises (e.g., pigs, ducks, etc.), while others grew horticultural crops (vegetable and fruit crops) or other high-value products (e.g., mushrooms). These growers then used some of their profits from the sale of these high-value crops/products to buy the required amount of food staple crop from other peasant farmers. These farmers then resold these food staples to the government to meet its mandatory requirement.

Since this new generation of Chinese farmers was very entrepreneurial, it did not take long for them to begin expanding the production of these high-value products. For example, while cereal crops increased an average of 2% annually from 1980 to 2005, vegetable crop production increased an average of 27% annually from 55 million tons in 1980 to 435 million tons in 2005. Fruit production expanded even more rapidly at 35% annually from 8.4 million tons in 1980 to 82.5 million tons in 2005. The increase in livestock production was similar with (a) pork production increasing at 12.5% annually from 12.7 million tons in 1980 to 50 million tons in 2005; (b) duck meat increasing at 27.4% annually from 299,505 tons in 1980 to 2.35 million tons in 2005; and (c) chicken meat increasing 30% annually from 1.17 million tons in 1980 to 10.15 million tons in 2005 (Source of all data: FAOSTAT, 2006). By the 1990s, as more and more farmers learned how to produce and market high-value crops/products, if one product became less profitable, many SFHs would quickly diversify or shift to other more profitable crops and livestock products. In other cases, as farmers and processors became more
vertically integrated, such as in the case of apples, Chinese farmers soon began to dominate the world market for apple juice, which has become a core component of most blended juice drinks in North America and Europe.

India. The transition of small-scale farmers from producing staple to high-value crops or products in India has been far slower, due to socio-cultural and economic factors. Real progress did not occur until different donor-funded projects began to demonstrate that women’s Self-Help Groups (SHGs) and Farmers Interest Groups (FIGs) could be organized to produce and market high-value crops/products. For example, two World Bank financed projects—Diversified Agricultural Support Services Project (DASP) in Uttar Pradesh and the National Agricultural Technology Project (NATP)—were specifically designed to decentralize extension, organize farmers, and through a strategic planning process, help different village-level FIGs identify one or more potential crops or products that could be successfully produced and profitably marketed.

For example, in the NATP project involving 28 project districts in 7 states, the following shifts in actual crop area occurred between 1999 and 2003 due to the introduction of a decentralized, market-driven extension system: (a) horticultural cropping area increased from 12 to 16 percent; (b) oilseeds increased from 3 to 11%; (c) herbs, medicinal and aromatic crops increased from 1 to 5%; and (d) the area planted to cereal crops (wheat and rice) declined from 55 to 47%. However, yields increased by 14% resulting in no appreciable loss in staple food production (Singh & Swanson, 2006). In addition, there were introductions of many other high-value products including livestock, aquaculture and other enterprises, such as mushrooms and vermi-composting, produced by landless rural women. During this 4-year period, average farm income/household increased a total of 24% across all 28 project districts, in contrast with only a 5% increase in farm income/household in non-project districts (Tyagi & Verma, 2004).

Becoming Market-Driven
In order for extension to advise small- and medium-scale farmers about alternative high-value crops or products that they might be able to successfully produce and market, it is essential that extension become more market-driven. The challenge for extension leaders is to determine how to bring about this strategic change in program focus. To begin, there are four essential axioms that must be followed as an extension system shifts to high-value crops, livestock and other enterprises (Singh & Swanson, 2006):

- **The first axiom** is: If there isn’t a market, don’t encourage farmers to produce a specific crop or product. Therefore, the first task to be carried out is to assess the potential markets for different high-value crops or products that can be successfully produced in different townships/blocks within each county or district.

- **The second axiom** is: If the crop (or product) cannot be successfully grown or produced within a county/district, due to unfavorable agro-ecological conditions, then look for more promising crops or products that are better suited to that county/district.

- **The third axiom** is: If farmers cannot easily transport the product to market, while maintaining quality, look for more promising products that can be successfully marketed.

- **The fourth axiom** is: Diversify into a sufficient number of different high-value crops/products that are suitable for the different farmer associations (FAs) within each county/district. This approach will mitigate risk by not saturating the market with one or
two crops/products, thereby driving down prices.

In India, under both the DASP and NATP projects, the first step was to carry out a Participatory Rural Appraisal (PRA). In each district, local research and extension leaders would systematically identify a range of “success stories” that were generally the result of entrepreneurial farmers who had already identified a market on their own, worked out a successful production technology for local growing conditions and then developed the necessary transportation and logistics to successfully market the product. These district research and extension teams then assessed each success story in the process of developing a Strategic Research and Extension Plan (SREP) for the district. They determined whether each success story was merely a very small, limited niche market that could only be served by a few farmers or whether there was considerable scope to expand the production and marketing of this crop/product. If the latter were the case, then these entrepreneurial farmers who had already developed these value-chains were approached to determine if they would be willing to work with extension as a key resource person in training other farmers. In many cases, these producers decided to become farm leaders in helping to organize other interested farmers into a Farmer Interest Group (FIG) and then in training these new FIG members in how to produce this particular crop/product.

In China, due to government policy directives, the County Agro-Technical Extension Centers (CATECs) were still focusing on increasing the productivity of staple food crops (i.e., food security) during the 1980s. In fact, the transition to a more market-driven extension system did not occur until the 1990s when specialized farm households (SFHs) and their respective Commodity Associations (CAs) began making technical demands on extension about different high-value crops or enterprises. For example, during the 1990s, these different CAs began using township extension classrooms for their planning, organizational and training meetings. In addition, they requested help from CATEC specialists to provide technical advice and training. However, as these CAs became more sophisticated, they began using paid consultants from research institutions, universities and private sector firms. The objectives of these CAs were clear—to gain access to more reliable market and technical information that would increase their profits. In short, it was the Chinese farmers that took the lead in developing value-chains for different high-value crops and livestock enterprises, and it was their technical demands that helped refocus the extension system and make it more market-driven.

In addition to developing technical expertise about different high-value crops and livestock enterprises, the field extension staff needs to have access to up-to-date market information and to make this information readily available to farmer associations. First, the extension system needs access to information on growing domestic markets for different high-value crops and products. As urban workers in both China and India continue to gain access to more disposable income, then their demand for higher-value food products will continue to increase. For example, per capita income is increasing at an annual rate of 8% in India and 10% in China. Therefore, domestic markets for these different high-value food products will continue to grow rapidly as these nations continue to experience rapid economic growth. The key is to first identify these emerging markets and then determine if farmers in each particular district would be competitive in producing specific crops/products for different markets due to (a) superior growing conditions, (b) proximity to markets and (c) a suitable transportation system or supply chain in supplying these markets.
While county/district extension staff may be able to assess local and district markets on an ad hoc basis, extension marketing specialists will be needed to develop market information systems (MISs) at the state/provincial and national levels to increase price and market transparency at the provincial and national levels. In addition, where opportunities exist for possible export crops or products, then the national research system or trade associations will need to develop a MIS(s) that will regularly update market information about potential export markets for different crops or products. For example, the Moldova extension system was rebuilt around the development of a MIS (see: http://www.agravista.md/en.html), so farmers are able to come to the local extension office to obtain current price information, identify potential buyers, and eventually enter into marketing contracts (Bondari, 2006). In the process, they also seek help from extension in developing farm management plans and in gaining access to production technologies needed to produce for specific markets.

Building Social Capital

Building social capital is another key element of an extension strategy aimed at increasing farm income and rural employment. Social capital is the ability to facilitate collective action for mutual benefit through the organization and participation of farmers and rural people. Putnam (2000) has differentiated social capital into two primary categories: bonding and bridging. “Bonding” is the process of creating a network of people who come together for a common purpose, for example, a self-help group or a farmer association. The focus is on group formation, building trust or a type of glue that holds a group of people together. “Bridging” social capital is the process of creating linkages with outside groups for a common purpose. In short, bridging social capital is externally oriented and seeks to add value through linkages with other groups who share a common interest. In this paper the concern is with both types of social capital, but especially in linking producer groups to external markets or processing firms that can open up new market opportunities. In the process, examples of farmer organizations from China and India will be described, including how these producer groups were organized to pursue both new markets and sources of technology.

As China moved toward a market economy, the structure of its agricultural sector began changing to reflect new market opportunities. As noted earlier, specialized farm households (SFHs) have formed to focus on different higher-value crop and livestock enterprises, such as vegetables, apples, pigs, ducks, mushrooms and so forth. Most of these new SFHs have been initiated by younger (<40 years of age), better-educated farmers (many with nine years of technical education) who have specific interests in different high-value enterprises. In most cases, these specialized commodity associations (CAs) started at the village and/or township level with a “bonding” type of social capital. Given the legacy of the communal system within rural China, organizing these village and township CAs was not difficult. However, since these local-level CAs were interested in marketing their products, they soon affiliated or merged with other CAs at the county, prefecture, or provincial level (i.e., bridging social capital), to develop commodity-specific value-chains that could supply different urban markets. By 2001, the Ministry of Agriculture estimated there were over 100,000 CAs throughout China (Swanson, Nie, & Feng, 2003).

India has been especially successful in creating social capital among rural women. The process generally begins by organizing rural women into self-help groups (SHGs). These SHGs are a type of “savings club” whereby each member contributes an agreed upon amount monthly to the club’s account so that individual
members can take out a small loan to start some type of economic activity. These SHGs would be a bonding type of social capital. Once organized, these SHGs can be effectively trained by extension to produce new products, such as dairy, poultry, sericulture, mushrooms and vermi-compost, and then to link these new Women’s Interest Groups (WIGs) to new market opportunities.

Organizing women farmers is particularly critical in alleviating rural poverty since they utilize the additional income to improve family nutrition, pay school fees, especially for their girls, and for health services. Another important factor is that women’s groups organize vertically across socio-economic lines, while men typically organize horizontally within socio-economic groups. Therefore, higher-level socio-economic women, with some education, can deal with external agencies, such as banks, markets, and training institutions and are willing to share this information with the other group members, most of whom are illiterate. The most effective means of reaching the rural poor is through women’s groups.

The following success story is illustrative of how women’s groups can be mobilized to produce high-value crops/products. In the Khurda District of Orissa State in India, most village ponds lay idle, serving largely as a watering hole for village livestock. After landless women in 16 villages had been organized into self-help groups by extension, these groups were assisted by the fisheries extension officer (FEO) in leasing their respective village ponds from the village Panchayat for conversion into a fish tank. These different women’s groups worked under the guidance of the FEO to clean, prepare, and fill these tanks with water. In addition, the FEO arranged for the purchase and delivery of fingerlings from a reliable fish nursery. Four months later, these groups began selling their first crop of fish. Next, the profits from the sale of fish were used to diversify into other high-value products. For example, one group purchased dairy cows that improved nutrition within the family, with the excess milk being processed into cheese and sold in the local market. Other groups leased land to produce horticultural crops, thereby diversifying into different high-value vegetable crops. Finally, as some groups gained experience, they diversified into polyculture fish production, resulting in the production of other higher-value products, such as freshwater shrimp, for high-end urban markets (Swanson, personal observation, 2003).

Another essential reason for organizing farmers into groups is to overcome the highly exploitive role that traders play in most developing countries, such as India. Small-scale farmers cannot on their own, supply district and regional markets, nor do they have up-to-date market information. Once organized, however, they can begin achieving “economies of scale” in producing specific high-value crops/products and in supplying regional, national and even export markets. Therefore, building social capital is a critical element in an overall agricultural development strategy aimed at reducing rural poverty (Swanson, 2004). Also, extension is well positioned to implement this strategy by: (a) helping farmers get organized, (b) determining their interests based on accessible market opportunities, (c) training these groups in how to produce specific crops/products and (d) working with them to develop supply chains in marketing their products.

Finally, to illustrate the number of village-level farmer groups that can be successfully organized by extension in a relatively short period of time, under NATP, 10,825 farmer interest groups (FIGs) were organized and under DASP 17,906 FIGs were organized, with 35% being female. For a detailed explanation of how extension can implement this process, see Singh and Swanson (2006).
Moving to a Decentralized Extension Structure

Another critical element in implementing an extension strategy aimed at increasing farm income and rural employment is the need to decentralize the national extension system. First, in planning market-driven extension programs, the field extension staff must focus on high-value crops/products that are suitable for different locations within the country, state/province, county/district and township/block, especially noting proximity to markets and agronomic conditions. Second, in addition to organizing farmers into groups, extension programs must reflect the different levels of farm resources within each county or district (e.g., availability of land and labor resources) as well as farmer interests, including gender considerations. In addition to these operational issues, decentralization of the extension system can also lead to greater stakeholder participation in extension planning and more efficient and equitable service delivery (Swanson & Samy, 2002a). Finally, it has been shown that decentralized extension systems can improve resource mobilization, reduce the strain on central finance and create greater accountability within the extension system (Bird, 1994). China and India have used different models and mechanisms to decentralize their respective extension systems and each system will be briefly described here.

Decentralization of the Chinese Agro-Technical Extension System. In China, prior to the economic reforms that began in 1979, there were many separate agricultural development agencies serving farmers at the county and township levels, including the Extension Station, Agro-Research Institute, Crop Cultivation Station, Plant Protection Station, Seed Station, Soil and Fertilizer Station, and the Agro-Technical School. These individual agencies were weak, they duplicated efforts and they were generally inefficient. To develop a strong, grassroots extension system, these different stations were integrated into new CATECs that delivered extension programs through Township Agro-Technical Extension Stations (TATES). This new integrated approach created efficiencies and focused more resources on extension priorities within each county. This approach was pilot tested in 29 counties during the early 1980s and subsequently expanded throughout the country during the 1990s. By 2001, over 80% of all counties in China had adopted the CATEC model (Swanson, Nie, & Feng, 2003).

A second part of the decentralization process was enacted in 1993 when the “Law of the People’s Republic of China on the Agricultural Techniques Extension” was passed. This law made each level of government (national to the township levels) fully responsible for funding its own level of the extension system, including the provision of capital support for facilities and equipment, plus operating funds to cover staff salaries and program costs (Nie, Swanson, & Feng, 2002). In addition, other county-level government offices began collaborating with CATECs to allocate funds for development projects and/or to provide training for farmers. For example, CATECs began submitting proposals to the County Department of Science and Technology (Nie, et al., 2002). If these proposals focused on promising technologies, addressed real problems and had the political support of farmers within the county, then they were likely to be funded. CATECs also cooperated with other government offices, such as the County Women’s Federation (CWF), in providing training for women farmers. By partnering with these different government offices, CATECs were able to gain access to new sources of operating funds and to build strategic alliances within the county for the benefit of rural farm households. (Swanson et al., 2003).
Decentralization of the Indian Extension System. In India, under the Training and Visit (T&V) Extension System, most extension activities were carried out by the Department of Agriculture (DOA, covering cereal crops, oilseeds and pulses) through its extension service. Other line departments, including the Departments of Animal Husbandry, Horticulture, Soil Conservation, Forestry, Fisheries, and Sericulture, had extension responsibilities, but lacked the field staff at the block and village levels to carry out these duties. Under NATP, the Government of India (GOI) pilot-tested a new, decentralized, farmer-centered, market-driven approach of organizing research and extension (R&E) programs. In each district, an Agricultural Technology Management Agency (ATMA) was established as a registered society, so that program decision-making would be decentralized and controlled by stakeholder representatives, including rural women and disadvantaged groups. This decentralized extension model was pilot-tested in 28 pilot districts across 7 states with the goal of helping farmers organize and to establish value chains for many different types of high-value crop and livestock systems, depending on the interests and resources of each group (Singh, Swanson, & Singh, 2006).

A detailed description of the ATMA model is described elsewhere (see: Singh, Swanson & Singh, 2006), so only key features will be outlined here. First, all policy decisions, concerning extension priorities and financial decisions, were under the direct control of the ATMA Governing Board (GB), which is composed of a cross-section of stakeholder representatives from across each district. Second, the heads of all line departments and research centers within the district make up the district ATMA management committee. Therefore, in addition to funding extension programs at the district and block level, the ATMA also provides modest financial support for those research and training activities that the GB considers a priority within the district.

Program planning and implementation is largely carried out at the block level by an integrated Block Technology Team (BTT). The staffing composition of these BTTs reflects those subject-matter areas that are important within each block, with agriculture (field crops) and animal husbandry officers being common to all teams. All BTT officers have a minimum of a university degree and some officers have post-graduate education. In addition, Farmer Advisory Committees (FACs) have been successfully established in each block to ensure full stakeholder involvement in program planning and to increase accountability. The composition of these FACs is clearly specified to ensure that all socio-economic groups of farmers, including women, schedule castes, and tribal groups are represented in the program planning process. For example, each BTT develops an annual Block Action Plan (BAP) and these plans are reviewed, modified, and then approved by block-level FACs before being sent to the ATMA GB for final approval and funding. (Sharma, Swanson, & Sadamate, 2001).

After this ATMA model was successfully pilot-tested under NATP, the Government of India decided to expand this decentralized extension system to 252 districts under the 10th five-year plan which ends in 2006 (Reddy & Swanson, 2006). In 2007, it is expected that this new decentralized extension model will be expanded to all 600 rural districts throughout India during the 11th five-year plan period. As a part of this decentralization process, the Ministry of Agriculture is expected to discontinue 27 centrally funded DOA programs and reallocate these funds directly to each ATMA district throughout the country.
Conclusions, Recommendations, and Implications

The agricultural sector in developing nations will continue to face important, if not daunting, challenges during the early part of the 21\textsuperscript{st} century. As noted earlier, there are currently 1.32 billion farmers in developing nations and this number is not expected to decline over the next decade or longer. At the same time, the world’s food system is being increasingly dominated by multinational companies, on both ends of the supply chain, with large-scale commercial farmers capturing increasing market share, especially for the major food commodities. The questions addressed in this paper are what role can small- and medium-scale farmers play in this global food system, and can public agricultural research and extension systems play a positive role in helping these small-scale farm households improve their livelihoods, and for many rural families, make the transition out of production agriculture?

National agricultural extension systems in developing countries are at an important crossroads. As outlined in this paper, continuation of the dominant 20\textsuperscript{th} century extension strategy of increasing the productivity of the major food crops or improving national food security will lead to declining farm incomes among small-scale farmers, increased hunger, forced rural-urban migration, and further environmental degradation. In examining trends to date, it seems clear that public agricultural research and extension systems cannot compete effectively with major multi-national life-science companies that are supplying large-scale commercial farmers with highly productive, proprietary technologies. If national extension leaders continue to pursue this strategy, these national extension systems will likely follow the pattern of agricultural extension systems in Europe, North America and Oceania, either in being progressively downsized or disbanded altogether. Rather, public agricultural extension systems in developing countries have the opportunity to refocus and make a major, long-lasting contribution to improving the incomes and livelihoods of small- and medium-scale farm households. In the process, these national systems can make a sustainable contribution to national development. However, to make this change will require sustained leadership and commitment to a new extension strategy for the 21\textsuperscript{st} century.

This paper outlined the basic elements of a new agricultural extension strategy that has been tested and proven effective in two major developing nations, China and India. Each nation has developed key elements of its agricultural extension strategy in a different way, but the bottom line is essentially the same in both countries. Both nations are developing decentralized, market-driven extension systems that focus on getting farmers organized and linking them to markets for high-value crops and products. Making this transition has not been easy. In China, the impetus for change primarily came from younger, entrepreneurial farmers who responded to opportunities in the marketplace. In addition, China shifted more of the cost of extension to the farmers themselves; therefore, it became imperative for extension leaders to respond to the type of services being demanded by this emerging cadre of progressive farmers and their commodity associations.

Changing the extension strategy in India was a more significant challenge, due to (a) the top-down nature of the extension system; (b) the complex structure of extension, which was operated by separate line departments as parallel extension systems; (c) the resulting entrenched bureaucracy; and (d) the fact that administering subsidies and distributing low cost inputs became the top priority for most line departments, rather than planning effective extension programs. In this case, the stimulus for change came from donor organizations that focused on pilot-testing different approaches as part of an overall
agricultural development strategy. The Government of India, recognizing the urgent need to assist the rural poor, assessed these different models and is now moving to implement a decentralized, market-driven extension strategy that can increase farm income and bring about sustained rural development.

To conclude, the move to a decentralized, market-driven extension strategy has important implications to the long-term human development of both farmers and extension workers. First, by working to establish new value-chains that link farmers to markets, both groups learn new business and management skills. Second, in organizing farmers into groups, farmers learn new leadership skills and how to work effectively together for the common good. These new leadership skills are particularly important in the case of rural women and other disadvantaged groups. Also, creating these grassroots, farmer organizations become the basic building blocks of democratic institutions; therefore getting farmers organized is important to the long-term political development of the country and ensuring that the interests of rural people are not neglected. Finally, as extension workers see that they are making a real difference in the lives of rural people, they gain both professional and personal satisfaction, and these feelings of a job “well done” become the collective stimulus for improving the performance of the extension system.

References


