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The New Agricultural Economy: Implication for Extension Programs

Burton E. Swanson, Professor
Mohamed M. Samy, Visiting Scholar
Andrew Sofranko, Professor
University of Illinois at Urbana-Champaign

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Abstract

A new global agricultural economy is emerging, with important implications for extension. Farmers are growing value-enhanced (VE) crops, exploring new ways of cooperating, searching out contracts, linking to international markets, and making investments in new business opportunities that utilize their farm products. This characterization represents a vastly different agricultural system than the one extension has served in the past. This Illinois study provides a window into the future for extension systems worldwide as they prepare farmers for these emerging global opportunities. This new global agricultural system demands that extension specialists adopt new strategies, understandings and skills, if they are to satisfy the emerging knowledge and information needs of agricultural producers in their respective countries.

This paper uses data from over 10,000 Illinois farmers to explore topics related to the new global agricultural economy. An index was developed to differentiate farmers into three groups representing different levels of participation in this new global agricultural system. The resulting analyses show that the "high participation" group is made up of younger, large-scale, and better-educated farmers. The "no participation" group is a reverse image: older, less educated, smaller-scale, and less likely to have a side business. The high participation producers are pursuing a variety of income generating strategies. Producers are making complex decisions that are connected with the global agricultural economy, yet they have inadequate information about these new market opportunities. The research-extension project on which this paper is based was designed to produce information on differentiated and value-added markets and to diffuse this information to farmers throughout the state. The survey reveals a growing demand for educational programs on different aspects of the new global agricultural system, which will require new sources of unbiased information on these new market opportunities.

Introduction

Agricultural extension organizations, in both developed and developing countries, are undergoing considerable reexamination and change, This has taken place against the backdrop of declining public resources, increasing corporate control over key agricultural sector components, increased competition from abroad, and new relationships among producers and between producers and end-user markets. Many of these trends are referred to as the *new global agricultural economy*. These changes have profoundly influenced how knowledge and information are produced and disseminated. In order for agricultural extension in developed and developing countries to remain a viable and credible source of information in this rapidly changing environment, it will need to identify the types of farmers who are more/less oriented toward and interested in the new global agricultural economy, and address their emerging knowledge and technology needs.

Framework

New biological and information technologies, more efficient means of transportation and distribution, and the elimination of trade barriers are resulting in a dramatic transformation of the global agricultural economy. As a result, commodity prices have decreased in both developed and developing countries. In addition, the traditional business model of being the "low cost commodity producer" has been seriously challenged. Worldwide, farmers are facing a difficult choice; either adopt new business models or exit the industry (Goldsmith & Gow,

2001). For example, during the 1990s it is estimated that 92,000 U.S. farmers were forced out or left farming (Agricultural Census, 2000). Consequently, increasing numbers of those remaining in farming are turning to more differentiated, value-added products and away from the production of bulk commodities. Many are also moving up the value chain by investing in value-added processing; focusing on "products" instead of commodities; integrating into supply chains instead of being intermediaries; and participating in networks rather than acting solely as independent producers (Flora, 1996).

The participation of farmers in these new economic relationships demands new skills and knowledge, new communication networks among like-minded producers, and the ability to identify and take advantage of emerging marketing and agro-processing opportunities. These developments are seen in both developed and developing countries (Swanson, Sofranko, & Samy, 2001). Consequently, extension organizations, if they are to remain viable institutions, need to plan and deliver extension programs that can help farmers take advantage of these new opportunities to increase their income within this new global agricultural economy.

In September 1998, a new research-extension initiative was launched in Illinois to help farmers learn how to utilize new business models for participating more effectively in the new global agricultural economy. It was apparent that if new economic models were to expand beyond a relatively small number of farmers, it would be essential to first identify the demographic characteristics of those producers who could successfully participate in these new business models. The second step would be to provide them with the necessary information, technology, skills, and social infrastructure to produce successfully for these new differentiated markets, thereby, capturing additional value from their farm products.

Purpose of the Paper

This paper has two main purposes. First, it will identify the characteristics of producers who are willing and able to participate in this new, emerging global agricultural economy. Second, the paper will identify the types of educational programs that will enable these farmers to produce successfully for these more differentiated markets, and in the process capture additional value from their farm products.

Methods and Procedures

A mail survey was used to collect data for this study from all farmers in Illinois between December 1998 and June 2001. Over 10,000 farmers completed the survey, representing about 14.3% of all farmers and over 30% of the farmland in that state. It is noteworthy to point out that the average farm-size for the respondents in this study is 650 acres in comparison with the state average of 355 acres. The survey instrument included several questions relevant to the topics being discussed in this paper: a) farmers' level of participation in new economic/business models (including production of value-enhanced (VE) farm products, joining producer organizations, and investing in value-added processing); b) farmers' socio-economic characteristics (including age, education, farm size, on-farm storage capacity, proportion of income from farming); and c) new educational needs, as determined in part by the respondents' expressed future strategies to increase farm income. Data were coded, summarized, and then descriptive statistics were calculated for each variable.

The main objective in the analysis is to develop an index, which measures producers' *participation in the new agricultural economy* or, in other words, their receptivity to thinking in terms of a new business model. Three variables in the survey met the criteria. In developing an index to measure farmers' participation in new agricultural economic and business models, three variables were selected to form the index. These variables are: 1) production of VE crops; 2) joining farmers' organizations such as "produces alliances;" and 3) willingness to invest in agro-processing firms or to sign multi-year marketing contracts. The first variable, "production of VE crops," reflects the level of farmers' willingness to shift from the bulk commodity market to more differentiated VE product markets. The respondents were asked to indicate if they produced or were interested in producing VE crops. The variable was coded on three-point scale where "2" indicates "currently producing VE crops;" "1" indicates "interested in producing VE crops;" and "0" indicates "no interest in VE crop production."

The second variable, "orientation towards joining farmers' organizations" reflects the degree of farmers' willingness to work in networks, share information and gain economies of scale rather than work independently. The variable was coded on a three-point scale where "2" indicates "currently a member of a farmer organization;" "1" indicates an "interest in joining an organization;" and "0" indicates "no interest." The third variable "willingness to invest in a value-added (VA) processing firm and/or sign a multi-year contract," measures farmers' willingness to be part of a food supply-chain by either investing in value-added processing or by signing a multi-year marketing contract. This variable was coded on a three-point scale where "2" indicates "willingness to both invest in value-added processing and sign a multi-year contract," "1" indicates "willingness to either invest or sign a multi-year contract," and "0" indicates "no interest in either one."

To establish the validity of this index, the relationships among the variables were examined using correlation analysis. Table 1 presents the correlation coefficients among the three variables. The results of this analysis reveal that all three variables have significant positive relationships, which indicate that these three variables are representatives of different aspects of the same concept/procedure, and thus can be summed into an index. The scores of the three variables were summed up to form the index for "participation in the new economy". The respondents' scores range from zero to eight. They were then divided into three groups indicating their level of participation in the new global agricultural economy. The aggregate scores of the respondent who indicated no participation in the new economy were coded "0." If the aggregate scores ranged from one to three, which indicated low participation in the new economy, farmers were coded "1." If the score ranged from four to eight, indicating high participation in the new economy, farmers were coded "2." As shown in table 2, 26.2% of the respondents had "high participation" in the new economy, 43.1% had "low participation," while 30.7% had "no participation" in new economic models.

Findings

Socio-Economic Characteristics:

The three groups of farmers vary not only in their level of participation in the new agricultural economy, but also show significant differences in their social and economic characteristics. Table 3 presents the major socio-economic characteristics of the farmers in the study, and those with different levels of participation in a new economy. Farmers who have "high participation" in the new economy were younger, averaging 49.7 years, operated farms more than a thousand acres, had larger herds of animals (if they raised livestock), had more on-farm storage capacity, and were more involved in value-added livestock production. In addition, about two-third of their family income was generated from their farms; 43% of these farmers were full time farmers, and 34% had an on-the-farm "sideline business," which was used to generate additional income. The middle group of farmers, who have "low participation" in the new economy, were older and had fewer resources than farmers had in the high interest group. Their farms contributed less to their family income and they were more likely to engage in off-farm employment.

Table 1

Correlation Coefficients among Index Items for "Participation in the New Global Economy"

Variables	Producing VE crops	Joining farmers' organizations	Investing in VA or signing contract
Orientation towards VE crops	--		
Joining farmers' organizations	.303*	--	
Investing in VA or signing contract	.380*	.292*	--

Note. Correlation is significant at the 0.01 level.

Table 2

Number and Proportion of Farmers Showing Different Levels of Participation in the New Economy

Level of Participation	Score	Number of Farmers	Percent of Farmers
No Participation	0	3,119	30.7
Low Participation	1-3	4,382	43.1
High Participation	4-8	2,663	26.2
Total		10,164	100

On the other end of the spectrum is the group of farmers with "no participation" in the new economy. These farmers were older, averaging 61.8 years, less educated, had smaller farms and less on-farm storage capacity, had fewer number of animals and were less involved in value-added livestock production. These farmers received less than 55% of their income from farming and only 16% of them had sideline business on the farm (Table 3).

Strategies to Increase Farm Income:

To identify the information and educational needs for these three groups, farmers in the survey were asked about how likely they were to pursue any of the following strategies to increase their farm/family income within the next 3-5 years: rent or buy more land, add or expand livestock, produce VE crops under contract, produce VA livestock under contract, improve their management skills, improve marketing skills, join farmers' organizations to improve market access, start direct-marketing to consumers, increase off-farm employment, and start or expand a sideline business. Table 4 presents the percentage of farmers in each group who indicated that they are highly likely to follow each of these strategies to increase their farm/family income.

As shown in table 4, all three groups of farmers agreed that improving both marketing and management skills are their top strategies in increasing their income during the next 3-5 years. However, the relative importance placed on each of these strategies varies among the three groups. More than one-third of the high-participation group was "highly likely" to improve their marketing and management skills, in comparison with 22.6% and 19.9% of the low- participation group, and only 8.9% and 8.3% of the farmers in the no participation group. The third strategy that was selected by the three groups was to add more land to their farms. Slightly more than 28% of the high participation group saw increasing their farm size as an important strategy to increase their income; while between only14.8 and 6.2% of the low- and no-participation groups, respectively, shared the same view.

Table 3

Socio-Economic Characteristics of Farmers, by Level of Participation in the New Agricultural Economy

	Average			
Socio-Economic Characteristics	No Participation	Low Participation	High Participation	Total
Age	61.8	54.1	49.7	55.3
Education (Years)	12.5	13.3	14.1	13.3
Average Farm Size (Acres)	382	606	1,033	650
On-Farm Storage Capacity (Bushels)	18,615	32,224	62,218	36,606
Number of Animals	115	211	354	216
Value-Added Livestock Producers (%)	10.4	14.2	20.3	14.7
Income From Farming (%)	54.0	56.6	65.3	58.0
On-Farm Sideline Business (%)	16	22	34	23
Off-Farm Employment (%)	60	72	57	65

Table 4

Farmers' Expected Utilization of Income-Improvement Strategies, by Level of Participation in the New Agricultural Economy

	Percent			
Strategy to Increase Income	No Participation	Low Participation	High Participation	Total
Rent or buy more land	6.2	14.8	28.3	16.0
Add or expand livestock	4.4	6.3	6.1	5.7
Produce value-enhanced crops under contract	1.8	5.3	22.4	8.9
Produce value-added livestock under contract	1.6	4.4	13.9	6.1
Improve management skill	8.9	19.9	33.4	20.4
Improve marketing skills	8.3	22.6	35.4	22.3
Join farmers' organizations to improve market access	1.3	2.4	9.1	4.2
Start direct-marketing to consumers	1.7	3.8	4.6	3.4
Increase off-farm employment	5.7	6.9	6.7	6.5
Start or expand a sideline business	2.4	3.8	5.0	3.7

Another important difference is seen in the strategies to produce VE crops or VA livestock under contract; 22.4 and 13.9% of the high participation group indicated that they are highly likely to pursue these strategies to increase their income, in comparison to 5.3 and 4.4% of the farmers in the low-participation group, and only 1.8 and 1.6% of the farmers in the no-participation group. Improving market access through participation in farmers' organization was considered as a highly likely strategy by 9.1% of high-participation group farmers, while less than 2.5% of the other two groups said it was of high importance.

Four of these strategies, namely improving marketing skills, improving management skills, producing value-enhanced crops under contract, and producing value-added livestock, underscore the importance farmers attached to not only improving their ability to take advantage of new crop/livestock marketing opportunities but also to be part of a supply-chain, with more em*phasis on contract production.* Another important market-improving strategy that is significant to the high-participation group is joining farmers' organizations, which emphasizes marketing, collective learning and knowledge sharing. For the low-participation group, adding or expanding livestock and increasing off-farm employment were given a slightly higher priority than they were by the other two groups.

Summary and Conclusions

Agriculture is changing in many ways, for both producers and for the institutions that serve them, including extension. The new global agricultural economy is characterized by new relationships between producers and end-user markets, and increasing competition from abroad. Many producers are turning to more differentiated, value-enhanced products and away from the production of bulk commodities. These producers are also moving up the value chain by investing in value-added processing. On the other hand, extension, which originally developed around the goal of helping farmers increase their productivity, is now operating in a vastly changing environment. The new global agricultural economy demands that extension adopt new strategies, knowledge and skills that will enable farmers to meet their emerging knowledge and information needs.

The findings of this paper indicate that 26.2% of the Illinois respondents had a "high participation" level in the new global agricultural economy; 43.1% had "low participation;" and 30.7% had "no participation" in these new economic arrangements. These three groups differ greatly in terms of most socio-economic measures. The "high-participation" group is made up of younger, large scale, and better-educated farmers who indicated that improving their marketing and management skills, plus farm expansion, were their expected strategies in adapting to these new opportunities. They expect to produce for

specialized markets, form new production and marketing relationships, and make value-added investments. However, all of these areas involve making major decisions that require new types of information. For producers to make sound decisions on matters such as producing and marketing specialty crops, investing in value-added processing, and evaluating the potential of organized producer groups will require more than conventional production and marketing information.

In adapting to the new global agricultural economy, extension systems worldwide will need to evaluate their present and future roles in disseminating appropriate market information on these new opportunities that will differentially affect producers. The Illinois model described in this paper suggests a "window" into the future as extension organizations assist farmers in responding to these new opportunities and challenges. In many developing countries, this future has already arrived and some farmers have already linked to global niche markets, with little notice by public extension. To increase farm income and reduce rural poverty, more developing country farmers will need to take advantage of these new and emerging opportunities. In this new global system, extension will need to provide appropriate educational programs, including technical and market information, to enable different categories of farmers to take advantage of these new opportunities.

For extension in developing countries to remain a viable and credible source of information in a rapidly changing environment, it will need to identify the types of producers who are more/less oriented toward the new global agricultural economy and their emerging knowledge and technology needs. More specifically, extension will need to focus on: 1) which groups should be the target of these extension efforts; 2) what educational programs should extension concentrate on; and 3) what skills and training are required for extension agents to be effective in assisting producers to be competitive in this new global agricultural economy.

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