

Web-Based Education for Kansas Agribusiness via *AgManager.info*

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Abstract

Approximately ten years have passed since the Internet was first widely used for delivery of Extension educational materials. As computer costs decline and rural broadband Internet connections become more accessible, the demand for information content on the Internet by agricultural managers continues to grow. Likewise, as Extension budgets tighten, the need for more efficient delivery systems is increasing.

In 2002, Extension faculty in the Department of Agricultural Economics at Kansas State University launched a single comprehensive site, *www.AgManager.info*, with the intent of providing information and tools for agribusiness managers in Kansas and the rest of the U.S. This site has become one of the most visited sites in the K-State Research and Extension system, currently receiving more than 50,000 visits per month.

AgManager.info provides diverse information on traditional topics such as *Agribusiness*; *Crops* (including market outlook, insurance, production and management); *Livestock* (including market outlook, insurance, production and management); and *Ag Policy* (with special emphasis on information regarding the 2007 *Farm Bill* debate). Recently, the site has been augmented via two new components which include *Energy*, focusing on the effects of energy prices on agribusinesses in Kansas; and *News* and *Upcoming Events*, which provide users with easily accessible updates of time-sensitive information which would be difficult to deliver using traditional methods, such as direct mailings. Decision tools are also available to users, allowing them to evaluate various scenarios specific to their operations.

This presentation outlines the development of *AgManager.info* and, more importantly, presents trends and challenges which will influence future delivery of Extension education via the Internet.

Introduction:

The use of the Internet for delivery of extension materials is relatively new. Most land grant university extension websites are less than 10 years old, but use of this medium for extension information delivery has grown rapidly during that time. This growth is driven by several factors, including agricultural managers' need for information access that fits their time constraints and budget considerations. At a time of reductions in the number of extension faculty, increasing travel costs and other associated costs of holding traditional meetings, the Internet offers a relatively inexpensive way to make quality materials available to a broad audience. As more users in rural areas gain broadband access, the potential for additional information delivery via the Internet is almost unlimited.

Despite this, there are several issues and challenges to be noted. Access is one of the most important issues, but there are others. Even managers with good Internet access may be hindered by the volume of material available and lack the ability to easily find the things they need. Because there are numerous ways large amounts of information can be organized, search capabilities are extremely important such that specific information can be easily found. However, due to the volume of information available, sometimes even the best search functions fail to provide quick and easy access to the desired information.

While the Internet may be relatively inexpensive, this method of education is definitely not costless. Evolving technologies and, in some cases, lack of standards, require frequent upgrades and changes of equipment and software. This requires personnel who are not only subject matter specialists, but are also web-savvy. Though the Internet is often touted as a way to bring education and information to the remote, less-educated and disadvantaged (Mason, 2006), the reverse is often the case, with those regularly using it often being the well-educated, well-off, connected types of managers possessing sufficient resources and skills to keep up with the changes taking place in information technology.

This paper describes some of the experiences encountered in developing the *AgManager.info* website as an extension resource and seeks to identify some of the upcoming trends and challenges in continuing to use the Internet as a medium for the delivery of extension educational materials to the agribusiness community in Kansas and the rest of the U.S.

Development of *AgManager.info*

Web delivery of extension materials in the Department of Agricultural Economics began in the late 1990's through individual faculty websites, which were generally organized around a specific topic or interest area such as crop risk management or livestock marketing. Although web sites sponsored by individual faculty received considerable usage, feedback from users revealed a desire for a more integrated comprehensive approach to information delivery.

As a result, a departmental initiative to develop a single comprehensive web site covering all aspects of agricultural economics was launched in 2001 and the new site, entitled *AgManager.info*, went online in early 2002, using only departmental resources, with little outside funding. The new site was immediately successful in attracting users in part because the already well established Crop Risk Management/Grain Marketing and Livestock Marketing web sites were transferred to the new *AgManager* site, which helped drive traffic to the site. Development of the new departmental site encouraged other faculty to routinely post information to the site and *AgManager* soon developed a reputation as an excellent source for farm management and agricultural policy resources as well as livestock marketing, crop risk management, and grain marketing information. Updates and decision-making tools in these areas, as well as current research articles were made available to users. In addition, upcoming extension events and conferences began to be publicized through this website.

As the site developed, more tools were added, including a grain basis tool, with associated charts and maps, taking the place of the periodically issued printed version. New topics were added as well, including agribusiness, policy, human resources and most recently, energy. News updates now include interviews with extension faculty on the "Agriculture Today"

radio program, downloadable as mp3 audio files, in addition to the routine grain and livestock market updates.

The *AgManager.info* website has become one of the most visited sites in the K-State Research and Extension system, currently receiving more than 50,000 visits per month, from more than 20,000 unique visitors. The most visited directory of pages on the site is the Livestock directory, which has a strong emphasis on livestock marketing updates and information. This is followed by Crops, which has a dual emphasis on crop insurance and grain outlook, complemented by the grain basis tool and maps. Next in order of use are the Farm Management, Upcoming Events, Agribusiness and Policy sections. Users of *AgManager.info* include agricultural producers, agricultural lenders, and agribusiness managers, as well as county extension personnel and academicians.

Time-sensitive information can be easily and quickly made available on the website. Conference announcements or changes, market updates and policy changes are particularly well-suited for this medium. Decision tools, primarily in the form of spreadsheets, are also available on the site and can be changed or updated as warranted.

Currently, notification of new materials or tools is accomplished using email listserv lists. Multiple lists for various topics are currently in use, though these are being condensed into one list for general circulation of website updates. In the future, plans to develop RSS (Really Simple Syndication) feeds are under development. RSS feeds allow users to access information and updates without actually visiting the *AgManager.info* site to find specific information each time. Users will simply browse the RSS feed on their reader and if there is a topic of interest, they can then go directly to the site for the full article, updated chart or tool.

Though users of *AgManager.info* have never been formally surveyed, most anecdotal evidence from input received from users suggests that frequently updated site content is the primary reason people visit *AgManager.info*. This is consistent with Schmitz (2005) who noted, "Content is king: There is no substitute for having quality content from internal and external

sources ready to go.” Most of the content on *AgManager.info* is generated internally, though there are pages that provide links to external sources such as USDA, cooperative centers, crop insurance resources and farm management centers as well as state and local government entities. Internal content is provided primarily by extension specialists in the department, which limits the scope of available material to what they have the time to create. This internal content is in the form of white papers, conference presentations, collected data sets, decision tools, and periodic updates of marketing information, generally on a weekly basis.

Some Current Trends in Web-Based Extension Education

Related to content is the trend of the increasing speed at which information now becomes obsolete. A useful aspect of the Internet is that it allows changes to be made and posted in a short amount of time. In the past, once a paper publication was produced, it was usually not revised or changed for a year, or often longer. Now, changes may be made to content on a daily or even faster basis. This may be both a blessing and a curse, since it places a greater demand on the content provider to spend time revising and adding to existing materials, rather than creating something new and is related to the growing demand for real-time data and information anytime and anywhere.

The use of laptop computers, personal digital assistants (PDA) and cell phones with Internet access has contributed to the increase in speed and the demand for up-to-date materials, since these devices allow the user greater geographical flexibility and thus increase the time available for users to view information. A University of Virginia survey of entering freshmen in the fall of 2006 found that 97% owned laptop computers and only 4% now owned a desktop computer (some owned both). This remote-access technology can be used in a number of ways. One example, in what is often considered a “developing” part of the world, is the use of text messaging in China by several government and private websites (People’s Daily Online, 2006) to send management suggestions and marketing information to farmers via cell phones.

This type of technology is also driving a greater level of interactivity, as seen by the increase in blogs, wikis, live webinars and “YouTube” style video sites. Blogs (from “web logs”) allow users to interact with each other and/or with a moderator concerning a topic of interest. A wiki is “a website that allows visitors to add, remove, edit and change content. This ease of interaction and operation makes a wiki an effective tool for mass collaborative authoring.” (Wikipedia). This high level of interactivity has obvious advantages in allowing users to interact with each other and with educators, but also requires programming resources as well as time from moderators/educators in determining topics to be discussed and taking part in and moderating the discussions. Quality control of the content is an issue and can be dealt with by limiting access and having someone checking the content regularly, but this is also resource intensive.

A further trend is the move toward visual media. The Internet is rapidly becoming more visual, as video and graphics technology and software become more available. GIS technology is now used in a variety of ways to present natural, production, and economic phenomena, using databases with GIS information. On *AgManager.info*, a grain basis tool with basis maps was developed in 2003 for providing grain basis information to users using GIS. However, the site has limited other graphical or video aspects. A cattle risk management seminar is available using Tegrity video streaming software and audio files from radio interviews are also available, but there are many opportunities to expand beyond these limited offerings.

One final trend for web-based extension education is the move to more complex web-based decision tools. Schmitz (2005) identified this as an important trend where systems that allow complex simulations are used. Currently most web decision tools are spreadsheet-based. The advantage of this is that extension personnel are familiar with spreadsheet software and can easily create and modify these tools, but limitations include users who do not own the appropriate software or are unfamiliar with spreadsheet usage, as well as long download times for large spreadsheets for rural users with dial-up connections.

Challenges and Opportunities Ahead

Though some of the hype of web-based education has worn off, the Internet continues to offer viable opportunities for extension faculty to easily, quickly, and inexpensively provide quality materials to a wide audience. But some of the challenges presented by the trends noted above should be addressed.

One of the first elements of this is to realize that delivery via the web is not cost-free and in fact, may be more expensive in some situations, due to rapid changes in technology and uses (blogs, wikis, webinars, graphics, etc). This may require frequent hardware upgrades and purchase of new software. There is also increasing reliance on people with specialized skills (programming, graphics, information systems, etc) and these resources are not inexpensive either. In some cases, the increased visibility through the website may bring more questions or comments to the extension specialists providing the material and may require more time from them to respond than in the past, leading to increased costs in terms of their time.

The issue is how to provide these services efficiently and well despite scarcity. Choices are necessary. There need to be choices regarding content (what is needed and what will be needed), instead of simply delivering each latest trendy item. For example, is a blog necessary for the site? It may be nice, but are the resources available to install, maintain and moderate it and is it really needed? Style issues are also at stake. Website appearance is very important, but there will be a point of diminishing returns, where some nice stylistic features may not be feasible or necessary. Further decisions will be necessary as to how often updates or revisions are performed.

Related to this issue is the matter of human resources, not only for computer programming, graphics and maintaining the website, but also the skills and capabilities of the extension assistants and specialists who provide and post the educational materials. There may be technological limitations for these key staff, perhaps due to age, lack of interest, lack of incentive, or lack of understanding, in addition to physical limitations on time to create the

materials and make them appropriate for use on the web. Even technical specialists may struggle to stay abreast of changes taking place. At this point, *AgManager.info* is not adequately formatted for use with cell phones or PDAs, despite a few requests for making material more readily available for these devices. A blog is being considered, but a prime factor impacting this decision is the availability of staff to moderate and interact with users.

Even if there are no problems in the delivery of materials, there needs to be consideration given to the appropriate technology to be used in providing materials. Gaps between the provider and the user may cause a serious disconnect, preventing the desired outcome of users accessing the extension materials provided via the web. These gaps may be technological in nature. One example recently experienced with *AgManager.info* was sending email updates in HTML format with hotlinks and graphics in the email. This made the update look professional and easily allowed users to click on a link to access the desired information, but also caused some users confusion or in some cases they were even unable to read the update due using to email browsers that do not recognize the HTML language or failed to properly convert the colors so that there was a white font on a white background, leaving a blank (unreadable) space.

Another gap between users and providers may be knowledge regarding how to use the information or tool. The user may have the proper technology (hardware, software, etc), but not understand how to use it in the way that the provider intends. This can be true when using spreadsheets to create decision tools. Users not familiar with moving around in and using spreadsheets may find it difficult to use such a tool, unless the provider has set it up with macros and buttons which allow it to be easily used.

The use of RSS feeds is yet another example where a lack of knowledge about the technology could impact users ability to readily take advantage of a time saving tool. RSS feeds allow users to easily receive periodic updates of new information which has been posted to the site. But a user desiring to use the feeds must set up a reader which contains the information

from the user's RSS feeds. This is not a cost issue since the software for all of this is made available to the user free of charge. Rather it is a matter of technical know-how, since the user must be capable of setting up the feeds and learning to access them. Plans for *AgManager.info* include installing RSS feeds, but it is realized that some educational activities need to take place for users to be able to close the gap and some of this might need to take place in person, not merely through email or other remote communication.

A third gap may exist in general literacy. The Internet generally requires a relatively high rate of literacy, leading to the so-called "digital divide." Birru, et al., (2004) note that most university and health websites are written at approximately a 10th grade reading level, higher than most printed newspapers, which are generally written at about an 8th grade level or less. Most computer users in the United States are not illiterate, but some may be classified as having "low literacy." The U.S. Department of Education's National Adult literacy survey suggests that 22% of the U.S. population has low literacy.

Thus, the challenge is to present extension materials on the Internet at an appropriate level of literacy, so that they can be understood and used. Unlike traditional meetings, where attendees can ask questions to clarify something they did not understand, the Internet may not allow questions to be easily asked and answered, so some simplification may be necessary. Yet, we do not want to simply "dumb down" material to the lowest common denominator, which is not necessarily useful for those with greater literacy capabilities. Email can be used to clarify issues and this works well for some people, but sometimes personal contact continues to be needed.

Nielsen (2005) suggests that sites targeting a broad audience (including university extension sites like *AgManager.info*) should improve usability for low-literacy users by simplifying and reducing text on the homepage and important category pages. Also, he suggests prioritizing information, with the most important being at the top of the page. Other suggestions are avoiding text that moves, streamlining page design to have one main column on content pages, and simplifying navigation by having the main choices in a linear menu. Short,

easy-to-read summaries with the main points highlighted also help such users. These need to be balanced with competing values of professional look and capabilities, the need for state-of-the-art technologies in some circumstances, and the amount of material to be presented.

The primary burden to close these gaps largely falls on the information provider. Rather than simply posting content to a website, the provider must also help make available the necessary technology. *AgManager.info* has long provided links for downloading Adobe Reader for using PDF, RealPlayer for audio files, and instructions for using Tegrity software for video streaming. Further education and help for users may be necessary, including computer workshops to assist users in downloading the necessary software, basic navigational and search techniques, and using tools installed on the website such as RSS feeds. One primary target for such workshops would be extension agents, who can provide a multiplier effect by being able to provide similar help for their clients.

The explosion of information now available has several implications. Many more choices are available than in the past and many users already have a set pattern of use. A government study in Britain found that a majority of people (51%) use less than six websites regularly and more than 90% go on-line to visit a specific destination (Reade, 2006). This suggests the need for active promotion of extension websites. In the past, many extension programs and publications have been relatively passive in nature, with the onus often being on the user to find the desired materials, by contacting the local extension agent or perhaps an extension specialist. In many states, the state extension service was close to a monopoly provider for some of the information, thus there was little question for producers or agricultural managers as to where they should look for information.

The goal of website promotion is to increase awareness and visibility so that users will try the site and eventually begin to include *AgManager.info* in their set of regular sites. One component of promotion means helping users find what they need and making the website as usable as possible. Blogs, wikis, videos, and other interactive forms can often only add to the

confusion causing some people to give up. The challenge is not only to provide needed content, but also help users find that information. It is difficult on a large site to organize it so that content is easy to find. In addition to a menu with the primary pages on the left side of the front page, *AgManager.info* uses a “Site Updates” menu as a feature on the front page to show new material posted, including the date and the author. Material is also cross-indexed by author and a site map is regularly updated. A search engine powered by Google is also used. All of these help, but requests still come via email or phone for help in locating specific materials on the site. This is a major challenge, since users’ patience is limited and a failed visit may lead to the user not returning.

The ability of users to determine the reliability and relevancy of materials posted on the Internet is also an issue. In some cases, the source ensures the reliability (e.g., *AgManager.info* is from Kansas State University, for which agriculture managers in Kansas already have some level of trust). But since the URL for *AgManager.info* does not include a reference to Kansas State University (i.e., it does not use the “ksu.edu” tag due primarily to the need to have a URL which could easily be communicated orally over the phone and at meetings), this may be a hindrance for some users. Hence, the provider needs to build legitimacy for the material presented. This may include traditional meetings which complement or are complemented by the web presentation of the same material.

The growth market for Internet use is the “life-long learning” market of those 25 and older. The National Center for Education Statistics found that between 1991 and 1999, participation in adult education had increased from 32% in 1991 to 45% in 1999 (Kim and Creighton, 1999). This contrasts with enrollment in higher education which remained relatively constant between 7.6-7.9% of the adult population.

The challenge then is to provide appropriate content for these connected managers and entrepreneurs. Based on visits to the site, the experience from *AgManager.info* seems to show that some of the primary topical preferences include frequent (weekly) market updates,

including basis information, for both grain and livestock; frequent crop insurance updates; and farm management resources, including decision tools. In addition, attentiveness to timely topics such as biofuels and the effects of fuel price increases is important. The energy page on *AgManager.info* experienced a spike in use in 2006, though this has leveled off recently. As new topics become relevant, there is a need to address those issues in a timely fashion with high quality economic analysis.

The website is also complemented by departmental conferences, including a large annual conference in August, showcasing recent faculty research. Extension education via the Internet will not entirely replace traditional meetings, though it likely will reduce the number of them over time. The purpose of face-to-face meetings with producers or other agricultural managers should shift from one-way (expert to learner) information dissemination to interactive problem-solving at larger conferences, with small interactive break-out sessions, instead of small county meetings with 10-15 producers or managers in attendance.

An increasing acceptance of web delivery by existing extension agencies as well as funding agencies, and recognition of the Internet as both a substitute and a complement to traditional meetings is also needed. There may be a tendency to evaluate extension programs based on more easily measurable criteria such as “butts-in-the seats.” There are methods for measuring web-usage, but it is difficult to determine exactly what has taken place when a user views or downloads a file. Was the article read? Was action taken by the manager because of it? These are unknown.

Providing web-based education need not be done alone. The need for collaboration among providers is greater now than in the past, as noted by Schmitz (2005). The days of the all-knowing extension agent have passed. Extension specialists should be exactly that: specialists. Comparative advantages certainly exist among extension providers and should be exploited. One tendency is for each department or unit to have its own website and duplication may often occur. This may occur even at a departmental level, as was the case in the

Department of Agricultural Economics prior to the development of *AgManager.info*, and is even more pronounced at the university level and beyond. Minor cooperation has occurred between *AgManager.info* and other entities, but this has generally been limited to simply cross-linking *AgManager* with the other site, rather than genuine collaboration in delivery of web services and education. Obstacles may include competition among departments, both for funding and recognition, at both a university and national level; a concern for “diluting the brand” by collaborating with other agencies; and a general aversion to cooperation between extension and private business, perhaps due to the profit motivation of business and the free provision of materials by extension.

Government agencies such as the RMA may have a role to play in enhancing and encouraging collaboration in the development and provision of Internet based extension programs. Funding proposals already encourage the use of collaborators and one easy way to further encourage this is to increase the weight given to this component. Coordination between funding agencies is another need, so that proper emphasis is given to web based programs without duplication. Other government involvement in web-based extension education may involve speeding the adoption of affordable broadband Internet access in rural areas. This is one of the critical issues for *AgManager.info* since many areas of Kansas are still limited to dial-up connections. Some parts of rural Riley county, where Kansas State University is located, did not have Internet access at all until 1999 and only beginning in 2007 have rural areas of this county had broadband access. This is an area with a relatively high and growing population compared to many other areas of the state, yet broadband access is only now available. Other areas lag further behind.

A final challenge for web-based Internet extension education is the archiving of material which may not be current, but can still be useful. There is a greater expectation by users that previously available material will continue to be made available. This has not been a job of extension personnel in the past, when presentation of current materials was the primary

emphasis. In some cases, when the supply of a print publication ran out the publication was no longer available unless there was deemed to be sufficient demand for a new printing.

The archiving of materials electronically is different than for printed publications and requires skills that most extension personnel may not currently possess. Digital libraries with search capabilities across multiple servers are necessary, yet the old paradigm of putting it all in a warehouse until it's time to throw it out may still apply. Often what happens on a website such as *AgManager.info* is that first, old material is unlinked or removed from the active website, though the file may remain on the server. Finally, someone decides to clean up the server and erases the file. The file may still be available from the original author, or stored in a back-up system, but finding it may be difficult, even if it is available.

Summary

The Internet is an excellent vehicle for delivery of agricultural extension materials and programs, both as a substitute and as a complement to traditional producer meetings. The *AgManager.info* website, operated by the Department of Agricultural Economics extension faculty at Kansas State University, has been providing content to producers and agricultural managers for over five years. Total monthly visits now top 50,000, from more than 20,000 unique visitors. Popular topics include livestock and grain marketing updates, grain basis tool and maps, crop insurance updates, and farm management articles and decision tools.

Current trends include rapid information obsolescence, which necessitates frequent updates and revisions. Users accustomed to near instantaneous information updates elsewhere on the Internet have greater expectations that extension providers will also update information more frequently than when information was delivered via print media. Moreover, mobile users intent on accessing the Internet via wireless enabled laptops, PDA's, and cell phones are growing quickly, increasing demand for rapid updates. Increased interactivity, through blogs, wikis, or webinars, places demands on providers for increased programming, material preparation, and time for moderation or interaction with users. The growing visual component of

the web creates the additional need for staff skilled in graphic design and programming, but offers opportunities to present a wider array of information, including the use of GIS powered databases to present data in new ways. One final trend is the move toward more complex web-based interactive decision tools and away from downloadable spreadsheet tools. This has the advantage of ensuring that all users are using the current version of a decision aid, not an old version that might be out of date.

There are many challenges presented for extension websites. Despite some of the potential efficiencies and cost savings, this method of delivery is not cost-free. In fact, it creates a demand for new resources that many departments might not currently have on staff. Access to resources for rapidly changing technology and personnel to run it will be an issue in the future. Choices will need to be made regarding site content and style.

Gaps may exist between the extension provider and users. These gaps may be technological in nature (lack of a broadband connection, usage of a mail client which does not read HTML format, lack of other necessary software); gaps in computer skills between users and providers; and gaps in general literacy which might require simpler website design. Another challenge is the enormous amount of material available on the Internet, leading to issues of helping users determine the reliability and relevancy of materials, helping them find what they need, and promoting the website actively. Additional challenges to be addressed include a lack of acceptance for web-based extension programs in some quarters, lack of collaboration among providers, and the need for archiving and creating a digital library of past information.

Despite these challenges, the internet will play a major role in the future of extension education. Extension departments will need to find the people they need to make this happen and funding agencies will need to provide funding for this type of delivery. While program content will be important, in the short run some of the educational efforts will need to be applied to reducing the existing technological and skill gaps so that users can effectively make use of the internet.

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