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Avian Influenza Biosecurity: Filling the Gaps with Non-Traditional Education

Abstract

Outbreaks of highly pathogenic avian influenza have become endemic, crippling trade and livelihood for many, and in rare cases, resulting in human fatalities. It is imperative that up-to-date education and training in accessible and interactive formats be available to key target audiences like poultry producers, backyard flock owners, and emergency responders. Online tools such as Moodle™, Second Life™, and Facebook are excellent resources for Extension educators and have been implemented in the arsenal of the avian influenza biosecurity program. However, each online tool has its pros and cons, and Extension educators must use the best tool for each target audience.

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Introduction

Avian influenza (AI) is a viral disease of significant economic and public health importance, particularly the one caused by the Highly Pathogenic Avian Influenza (HPAI) H5N1 strain. This disease is disruptive to the poultry industry, causing millions of birds to be destroyed to prevent further spread of the disease (Ligon, 2005). It is estimated that this strain alone has cost the global economy over $20 billion (UN, 2008). There is also a growing concern over the loss of human lives and management of potential pandemics of the HPAI H5N1 virus. While the virus maintains a 60% reported case fatality rate, the transmission capability of the HPAI H5N1 virus to humans remains limited (WHO, 2012).

Those who search the Internet for information on biosecurity and poultry diseases such as avian influenza may get a wide variety of information, which may be overwhelming and often confusing or inaccurate. While traditional methods of disseminating information (e.g., workshops, fact sheets, etc.) are still used by Extension, non-traditional methods such as eXtension (electronic Extension), social media (e.g., Facebook), Moodle™, and Second Life™ have recently gained wide popularity and acceptance. With decreasing federal and state funding to support traditional Extension activities, Web-based programs such as eXtension, along with social media outlets, are rapidly becoming the major means of disseminating information. Our poultry Extension team at the University of Maryland has developed four online tools for disseminating information on avian influenza and biosecurity measures to prevent this economically devastating disease that affects poultry and humans worldwide. This article presents our experiences with each tool and efforts to improve visibility and usage by each

target audience.

eXtension Avian Influenza Homepage

An avian influenza topic page was developed through the University of Maryland eXtension site to provide a broad overview of the disease. Our eXtension Community of Practice (CoP) on avian influenza has published 22 pages of content covering a wide range of information on AI, including facts about the virus, AI in poultry and humans, biosecurity practices, and emergency preparedness and response. Our eXtension AI CoP has been available at: www.extension.org/pages/24425/avian-influenza-homepage since it became active in 2010.

However, eXtension CoP has some limitations such as its ability to be found on the Internet. When we conducted a Google search on "avian influenza" (2012a), our eXtension AI homepage was not even listed on the first 10 pages of 4,930,000 results. The first item on the list was a "PubMed Health" fact sheet from the U.S. National Library of Medicine, and the fourth and only Extension item was a UC Davis fact sheet on AI. While Google searching "avian influenza extension" (2012b), our eXtension AI homepage appeared as the first listed item out of 705,000 results; however, it is unlikely that people Google search for "avian influenza extension." Therefore, more needs to be done on the part of Extension agents and Extension Web designers to attract more users to eXtension pages. We could certainly use "Top 10 Ways Extension Can Have More Impact on the Internet," as provided by Rader (2011), who pointed out that "because of lack of awareness of Extension, Extension must drive traffic to their sites by being popular".

MoodleE™: Online Avian Influenza Biosecurity Training Program

Moodle™ (Modular Object-Oriented Dynamic Learning Environment) is a free and open-source e-learning software platform used to manage online courses. Some of the many Moodle™ features include the incorporation of activities and resources such as:

- Lessons/Books—deliver materials that may be organized by topic or weekly schedules.
- Assignments—students can submit files (e.g., word-processed docs, spreadsheet, images, and video).
- Forum discussion—open up communication and exchange ideas by posting comments.
- Quizzes/Exams—variety of question formats (multiple choice, True/False, written answers, etc.)
- Glossaries—auto-link select words for definition.
- Questionnaires—gain feedback with check boxes, rating scales, essay boxes, etc.
- Videos/Images—visual media can be uploaded or embedded into courses.
- Certifications—set grades for printable certificates.

Our Avian Influenza eXtension team, a part of the EDEN (Extension Disaster Education Network), has

created three self-directed avian influenza biosecurity Moodle™ certification courses that focus on backyard flock owners, youth and 4-H members, and emergency responders. Through these educational outreach courses, target audiences will be able to acquire vital information on disease prevention strategies, including proper methods of isolation, traffic control, and sanitation/decontamination as well as response and recovery procedures. Courses are hosted at campus.extension.org and may be found under Agriculture Disaster Preparedness. Anyone can log in with a username and password to access the AI Biosecurity courses.

While the online courses have been available to the public, including Extension educators, emergency responders, backyard flock owners, 4-H youth, and state and federal personnel since 2010, usage by emergency responders and 4-H youth been has been slow and sporadic compared to backyard flock owners. The under-utilization of our biosecurity modules by 4-H youth may be attributed to lack of computer access, time, or awareness of the modules, similar to what was observed by Stevenson et al. (2011) regarding their online biosecurity modules for 4-H livestock project volunteer leaders in Washington State. They suggested promotion of the module and the incentives to increase usage, and we are adopting the same strategy.

We are also taking into account the findings of Hightower, Murphrey, Coppernoll, Jahedkar, and Dooley (2011) who conducted a survey of Extension educators who use Moodle™ as part of eXtension. They found that there were positive and negative elements affecting the adoption of Moodle™. Positive elements included access to technical support, ease of use, favorable attitude toward eLearning, and recognition of use and application, while negative elements included the need for continuous technology training, inherent changing of technology, lack of marketing exposure, and lack of scholarly recognition for eLearning efforts.

Our experience with our Moodle™ courses is consistent with all of the positive aspects reported by Hightower et al., but the most negative experience we have encountered with our Moodle™ courses so far is the lack of marketing exposure. We are currently addressing this problem with a marketing campaign through our Extension colleagues with the Extension Disaster Education Network (EDEN).

Second Life™: Virtual Biosecurity Simulator

Second Life™ is an online 3-D world where users (over the age of 13) interact with an avatar. Online environments can be created and used for virtual hands-on training and may be used as a group teaching tool as well. With the help of computer graphic experts from eXtension, our AI eXtension team has created a virtual backyard flock simulator in Second Life™ (http://secondlife.com/destination/avian-influenza-prevention) to demonstrate proper biosecurity practices such as cleaning and disinfecting of cages, practicing traffic control, placing new birds under quarantine, looking for signs of disease, wearing protective clothing, and sanitation/waste management. However, we have not widely marketed our backyard flock simulator because we are finding it quite difficult to navigate. Our personal communication with other users of Second Life™ indicates that we are not the only ones encountering some difficulties with Second Life™. We are reluctant to recommend our backyard flock simulator until we can iron out the kinks and make it more user friendly.

Avian Influenza Facebook Page

Social media, such as Facebook, Twitter, and YouTube, have exploded onto the Internet scene over the past several years with the capability for instant, real-time information sharing. Facebook, for example, in October 2012 had one billion monthly active users on average (Facebook, 2012). Users can share a variety of information, including posts, photos, videos, articles, and websites, and establish dedicated interest pages or groups. The avian influenza Facebook page (www.facebook.com/Extension.Avian.Influenza) was created to provide general information on AI and engage users. It also serves as a discussion forum about concerns, issues, or questions regarding AI. In addition, it provides updates on new research, confirmed AI cases, good biosecurity practices, etc.

As of December 2012, our Extension – Avian Influenza Facebook page had 46 "Likes" from the U.S., Egypt, Indonesia, Colombia, Chile, St. Kitts, and India. Our colleagues from EDEN are helping us generate more "Likes" through a renewed marketing campaign. Recent posts include a video by NOVA on the similarities and differences between the 1918 Spanish Flu and "Bird Flu" and an article from sciencenews.com indicating that climate change could increase levels of avian influenza in wild birds. It appears that Facebook appeals to a younger audience, and this is reflected in the majority of our Avian Influenza Facebook users who are mostly 25-34 years of age.

Summary

At a time when state and federal resources to support traditional methods of Extension program delivery are rapidly diminishing, the digital age has created new opportunities for Extension educators to disseminate information through electronic means such as eXtension, Moodle™, Second Life™, and Facebook. Each method has its advantages and disadvantages as well as predominant users and target audiences. Extension educators must consider all possible tools and options for disseminating information such as the materials we developed on avian influenza and poultry biosecurity.

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