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## Publishing and Archiving Trends in Open Access: Preliminary Results

Jenny Oleen  
*Western Washington University*

Diana Farmer  
*Kansas State University*

Livia Olsen  
*Kansas State University*

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## Publishing and Archiving Trends in Open Access: Preliminary Results

### Abstract

Agricultural researchers are engaged in the growing open access (OA) movement, either publishing in OA journals or archiving in OA repositories. The latter is reflected in the use of the institutional repository (IR) at Kansas State University (K-State), a land grant institution. K-State library faculty are analyzing faculty publications to determine the publishing and archiving habits of selected researchers. Reviewing copyright agreements from journals reveals those with policies for archiving post-prints in an IR; articles by these authors are compared to their total three-year article output to determine the efficacy of the current IR program at K-State. Chosen for analysis were the faculties of the College of Agriculture's Department of Animal Sciences and Industry's (ASI) and the College of Veterinary Medicine's Department of Clinical Sciences (CS) who conduct research on food animals. ASI has one of the largest faculty on campus as well as a department head supportive of the University's IR. While many of ASI's extension publications are in the IR, several important animal science journals do not allow for self-archiving or deposit in an IR. Many articles published by ASI faculty are co-authored with faculty in CS, who also focus their research on livestock.

### Keywords

open access, institutional repositories

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**Publishing and Archiving Trends in Open Access: Preliminary Results**

JENNY OLEEN  
Western Washington University  
Bellingham, WA  
jenny.oleen@wwu.edu

Diana Farmer  
Kansas State University  
Manhattan, KS  
dmfarmer@k-state.edu

Livia Olsen  
Kansas State University  
Manhattan, KS  
livia@k-state.edu

**Abstract**

Agricultural researchers are engaged in the growing open access (OA) movement, either publishing in OA journals or archiving in OA repositories. The latter is reflected in the use of the institutional repository (IR) at Kansas State University (K-State), a land grant institution. K-State library faculty are analyzing faculty publications to determine the publishing and archiving habits of selected researchers. Reviewing copyright agreements from journals reveals those with policies for archiving post-prints in an IR; articles by these authors are compared to their total three-year article output to determine the efficacy of the current IR program at K-State. Chosen for analysis were the faculties of the College of Agriculture's Department of Animal Sciences and Industry's (ASI) and the College of Veterinary Medicine's Department of Clinical Sciences (CS) who conduct research on food animals. ASI has one of the largest faculty on campus as well as a department head supportive of the University's IR. While many of ASI's extension publications are in the IR, several important animal science journals do not allow for self-archiving or deposit in an IR. Many articles published by ASI faculty are co-authored with faculty in CS, who also focus their research on livestock.

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## Introduction

Traditionally, a land grant institution's mission includes research and extension about agriculture, engineering, family life, nutrition and more, as well as providing the most current research in a digestible format to the general public, particularly the agricultural community. University libraries, as a part of the larger open access (OA) movement, are also providing their original research articles, freely available to the public, through institutional repositories (IRs). Kansas State University (K-State) began depositing items in its institutional repository, K-REx, in 2006. As the OA movement has grown, it was expected that the growth of content in K-REx would grow accordingly.

However, a review of the literature revealed that the copyright policies of commercial publishers were and continue to be barriers to the use of IRs (Davis & Connolly, 2007). The review indicated that many researchers did not understand exactly what rights copyright covered (Anderson, Dwyer & Leahy, 2012; Davis et al., 2007; Lwoga & Questier, 2014; Nath, Joshi, & Kumar, 2008; Seadle, 2005) and that the pressures of promotion and tenure policies (career advancement) predicated publishing in highly regarded peer-reviewed commercial journals (Abrizah, 2009; Anderson et al., 2012; Davis et al., 2007). As a result the authors of this paper also wanted to review the publications in which the researchers were publishing and examine the copyright agreements to determine if this affected the deposit of articles into K-REx.

## Kansas State University's Institutional Repository: K-State Research Exchange (KREx) Outreach

In the early days of KREx, librarians encouraged faculty participation through their traditional channels such as attending department meetings, informational handouts, and articles in on-campus publications. While these methods introduced campus faculty to the IR, in the course of their busy research and teaching schedules, faculty found it difficult to remember to actually deposit articles in KREx. K-State Libraries' Scholarly Communications Librarian devised a method to remind faculty to deposit their publications. Beginning in 2012, K-State faculty received an email from the library each time they publish an article. The email included a request for permission to deposit the article into KREx. Database searches are conducted to identify and gather the new publications. While this should have increased the participation rate, without explicitly examining the number of publications versus the deposit rate, there was no way to determine if this push for deposits was effective.

## Study Groups

The authors of this paper wanted to analyze the publishing and archiving habits of K-State's agricultural researchers to see if the new procedure had resulted in an increase in the use of K-REx. Agricultural research is a major component at K-State and agricultural researchers are more engaged in supporting OA by publishing in OA journals or by archiving their research in OA repositories. The food animal faculties of the Department of Animal Sciences and Industry (ASI) and the College of Veterinary Medicine's Department of Clinical Sciences (CS) were selected for this analysis. One of the largest departments on campus with a department head who is very supportive of K-REx, ASI seemed a logical choice. Since many of the ASI food animal faculty co-publish with faculty in CS, the decision was made to select these 2 groups for an analysis of their publications and their deposit patterns in K-REx. Within these two departments, the authors of this study only examined the publishing and archiving habits of researchers studying food animals.

## Methods

Four databases were searched for articles written by researchers in the study areas – Web of Science Core Collection, Scopus, PubMed and CAB Abstracts. The study was limited to the publication years of 2011, 2012 and 2013. Of these databases, the Web of Science Core Collection and Scopus had very similar results—185 and 187 respectively. PubMed resulted in 167 articles written by these authors—a disconcerting discovery as this is the database of choice in the College of Veterinary Medicine and, yet, it recovers significantly fewer articles than Web of Science and Scopus. CAB Abstracts was an outlier with 334 retrieved articles; a significantly higher number due to CABI's indexing practices. CABI indexes not only journal articles but also book chapters and conference proceedings. As a result, CAB Abstracts included conference proceedings from the 2011, 2012, and 2013 Swine Day (and other similar proceedings) held at K-State. Automatically added to K-REx as a part of an agreement with the Department of Animal Science and Industry, these proceedings account for 105 articles by K-State researchers that are not included in the other databases.

## Results

A total of 386 articles, book chapters, or conference proceedings written by K-State researchers were retrieved in this study area (these will be referred to as articles in the remainder of this paper). Removing the Swine Day conference proceedings and others, there were 281 articles written by K-State researchers in the study area. Of these articles, only 13 are currently archived in K-REx.

Database	Articles
PubMed	167
Scopus	187
Web of Science Core Collection	185
CAB Abstracts*	334
Total (de-duped)	386
Total (de-duped, sans Swine Day)	281
K-State Research Exchange	13

\* includes the Swine Day conference proceedings automatically archived in K-REx

Of the seven researchers from CS in this study, four (57% of those examined) have archived their work in K-REx. For these researchers, the total number of articles archived range from a high of 72 published for the years studied to a low of 8. The maximum archived in K-REx by a researcher was seven, while one researcher from the College of Veterinary Medicine only had one archived. To determine the percentage of articles archived in K-REx per researcher, the number of articles indexed by PubMed, Scopus, and Web of Science for each researcher were averaged and compared to the researcher's number of articles in K-REx. CAB Abstracts was not used in this portion of the study due to the Swine Day articles. The percentage of articles archived by CS faculty ranged from 6.25% to 29%, with an average percentage of 21.6% articles archived. Removing duplicates where researchers collaborated on research, 7 of the 12 articles total published by CS faculty have been archived in K-REx.

Author	K-REx	PubMed	Scopus	Web of Science	% Archived
VM1	3	8	13	10	29%
VM2	1	10	27	11	6.25%
VM3	3	9	9	8	34.6%
VM4	7	28	72	28	16.4%
Average percentage of articles archived					21.6%

Conversely, the ASI researchers accounted for a much larger number of authors. Of the 46 ASI researchers in the study, 23 had articles archived in K-REx. Only 14 of these 23 researchers had articles archived in K-REx that were published in 2011-2013. Once duplicates resulting from collaboration were removed, there were six articles published by the ASI faculty from 2011 to 2013 archived in K-REx. This accounts for 75% of the articles archived by ASI faculty for the time period. Looking at the data by researcher, the number of articles published during the study years ranged from two to 27 articles, with the percentage of articles published by each researcher available in K-REx ranging from 7.69% to 50%. The average percentage of articles authored by ASI researchers archived in K-REx was 23.51%.

Author	K-REx	PubMed	Scopus	Web of Science	% Archived
ASI 1	2	24	24	23	8.45%
ASI 2	2	19	20	20	10.17%
ASI 3	1	2	2	2	50.00%
ASI 4	1	7	7	8	13.64%
ASI 5	2	23	24	25	8.33%
ASI 6	1	2	2	2	50.00%
ASI 7	1	2	8	5	20.00%
ASI 8	2	12	14	14	15.00%
ASI 9	1	10	1	8	15.79%
ASI 10	2	22	25	25	8.33%
ASI 11	1	6	6	6	16.67%
ASI 12	1	3	4	3	30.00%
ASI 13	2	2	3	3	75.00%
ASI 14	2	24	27	27	57.69%
Average percentage of articles archived					23.51%

While food animal researchers at K-State have historically been very supportive of K-REx and of archiving works in it, ultimately their ability to archive is dependent on the copyright transfer agreements authors sign in order to publish. Of the top ten journals in which study researchers published (each with four or more articles from this study published during the time period), three do not formally support archiving articles in an institutional repository. Of the remainder, only two allow the unconditional archiving of the pre- or post-print and only one of those, PLOS One, allows the archiving of the Publisher PDF. Three journals, including the two top journals in the

field—*Journal of Animal Science* and *Journal of Dairy Science*—require an open access fee to archive an article. The final journal allows archiving of the post-print once an embargo period has passed.

<b>Top 10 Journals</b>	<b>Archiving?</b>
American journal of Veterinary Research	Archiving not supported
Journal of Animal Science**	Post-print or Publisher PDF with fee
Journal of Dairy Science**	Post-print with fee
Professional Animal Scientist	Archiving not supported
PLOS One	Pre/Post-print & Publisher PDF
Theriogenology	Pre/Post-Print
Journal of Veterinary Medicine Education	Archiving not supported
Journal of Animal Physiology and Animal Nutrition	Pre-print; Post-print with embargo
FASEB Journal	OA fee required
Bovine Practitioner	Archiving not supported

### **Conclusions**

Of the articles published during the study time period, over 100 required payment of a fee for any sort of open access option. Only 14 articles were published in journals that allow the post-print or publisher PDF to be archived without fees or embargoes. This highlights the problems that many copyright transfer agreements create for the open access archiving and distribution of food animal researchers' scholarly works. Despite the interest from many of these researchers in making their work available via an open access repository, they are unable to do so. This also impacts K-State's extension mission, as archiving research in an open access repository such as K-REx, is a way to fulfill that mission.

This study also examined the effectiveness of the new weekly email promotional procedure for a particular research area. There has been an increase in deposits from the study authors. There were two articles deposited in 2011, the year prior to the start of the promotional project. In 2012, the year the project began, there were 4 articles deposited from the food animal researchers. Finally, in 2013, the number increased to 7 articles.

In conclusion, the promotional project did have some positive impacts. There has been a slight increase in archiving since 2010, as well as greater IR participation from the CS faculty over the study time period. That said, despite departmental support for open access and IR deposit, there is continuing difficulty in encouraging IR participation due to restrictive copyright agreements.

### **Future directions**

While this preliminary investigation has been useful, as a result, the authors are now considering future plans related to IR deposits. Investigating the publishing habits of faculty in other departments may uncover different trends in regard to copyright. It could also identify which databases are most useful for K-State faculty and students, thus affecting library purchasing

decisions. Discovering the funding sources for the research resulting in each article might also be an interesting avenue to pursue. Are researchers funded by certain agencies more likely to deposit in the IR than those funded by other agencies? Are there other databases that should be included in the promotional routines in order to increase the number of faculty publications in the IR?

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