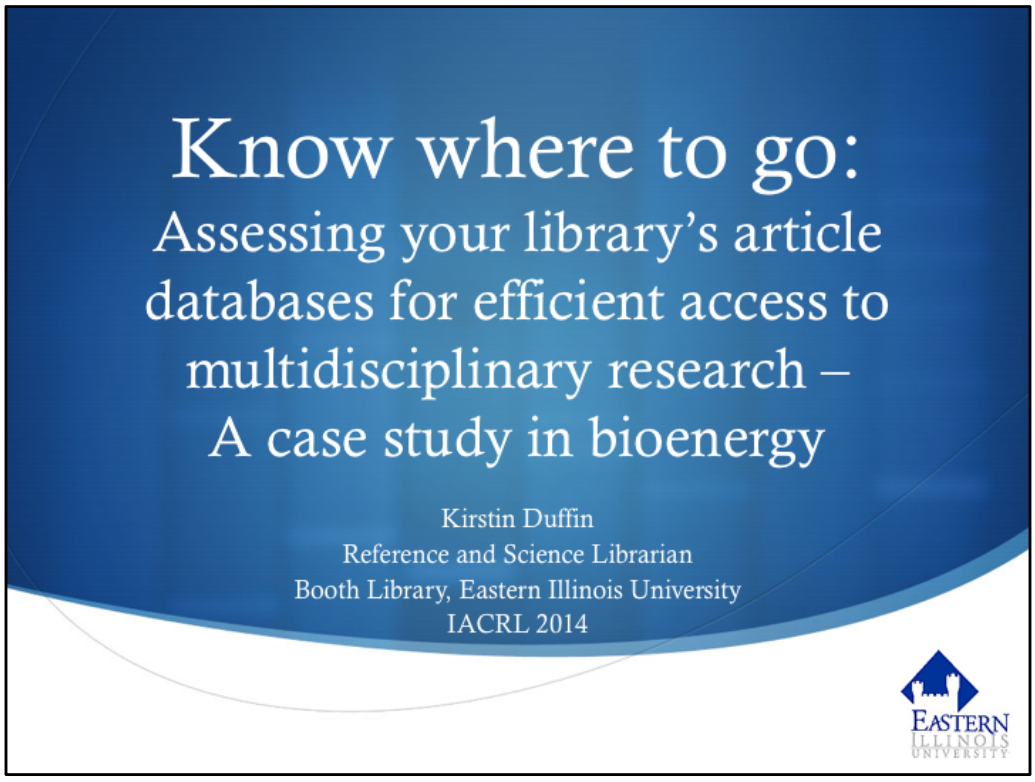
March, 2014

# Know where to go

Kirstin I Duffin




Useful for anyone helping students and researchers to find bioe info.
Apply these assessment strategies to other multidisciplinary topics.

For quick reference, see slide 30 – Take-home points

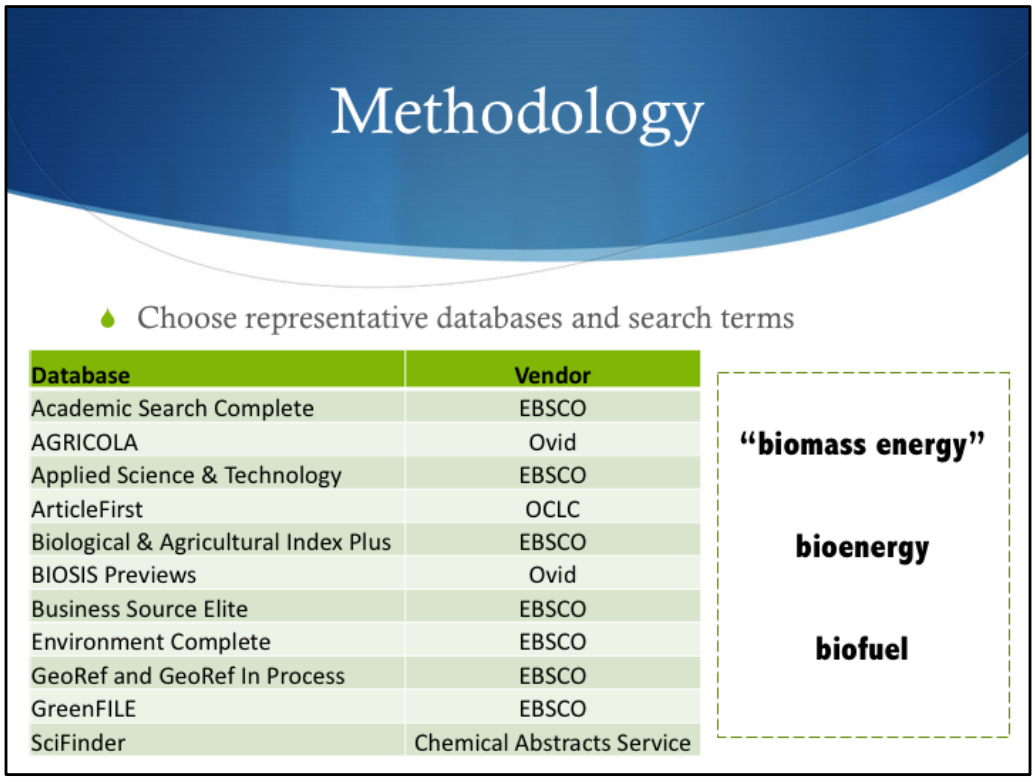
# Impetus for study

(Conducting research for a Bioenergy and Bioresources course I was taking in my biology master's degree coursework. Led me to wonder in which databases to focus my searching.)

# Purpose

- Identify *which EIU databases* index the most bioenergy-related publications.
- Determine *top journals* resulting from these database searches.
- Compare *high-impact journals* in field with top journals detected in this study.
- Associate this research with *applied examples* using sample real-world searches.

Identify databases to which EIU subscribes that provide access to the most bioenergy-related publications.
Determine top journals resulting from these database searches; compare to top-ranked journals in field.
Associate high-impact bioenergy journals with the databases in which they are indexed.




Choose search terms that broadly encapsulate discipline (and not go too narrow – e.g. energy crops, biodiesel, bioethanol, biogas, biorefin*, biomass gasification), yet are narrow enough to exclude unrelated publications (e.g. NOT biomass).

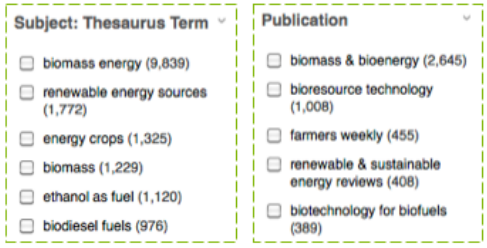
Use these simple terms as keywords in the advanced or multi-field search of the databases, capping to pub date of 2013. Run all searches on the same day to ensure equal comparison across sources.

# Methodology

- Searching round 1:
  - {"biomass energy"} / {bioenergy} / {biofuel}
  - Advanced search by keyword, earliest available → 2013 publications
  - Compare database results
- Searching round 2:
  - {"biomass energy" OR bioenergy OR biofuel}
  - Compare -- publication year -- title vs. abstract vs. default search
- Searching round 3:
  - Applied examples, e.g.:
  - {lignocellulose and ("biomass energy" or bioenergy) and enzymes}
  - Compare multidisciplinary vs. subject-specific databases

# Methodology

- For Searching round 2 – {"biomass energy" OR bioenergy OR biofuel}, default search:
  - Sum subject hit counts across databases, when available
  - Sum title hit counts across databases, when available



# Methodology

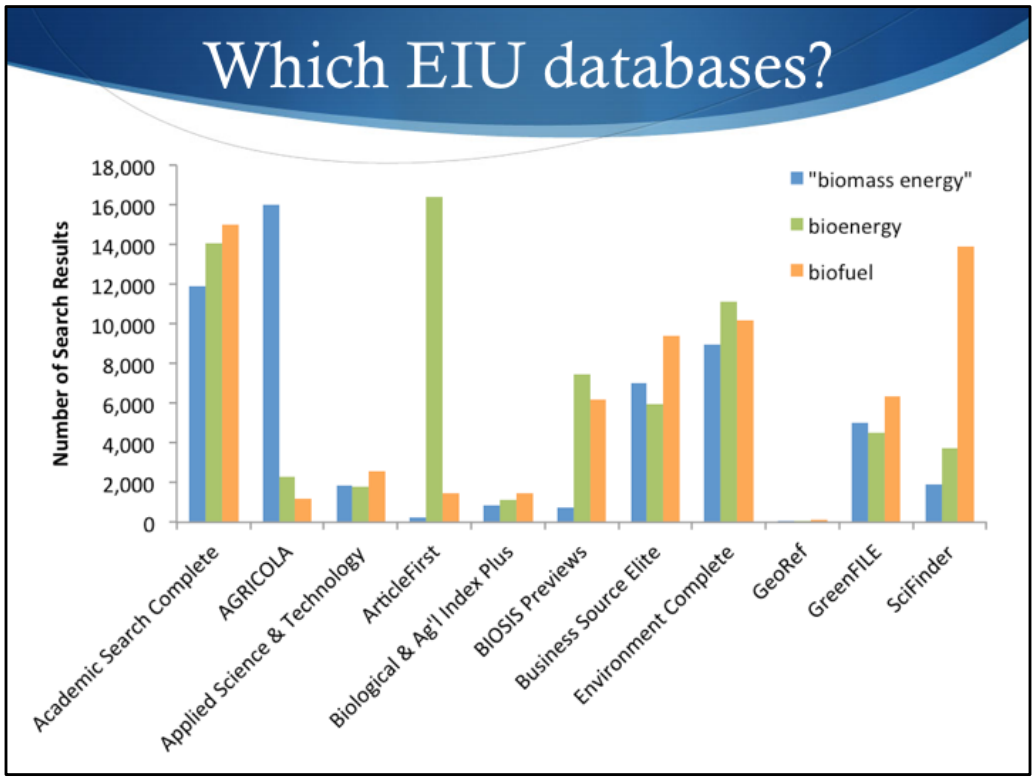
- Identify high-impact bioenergy journals




- Compare high-impact journals of field with top journals from Searching round 2 –

  {"biomass energy" OR bioenergy OR biofuel}, default search


Results
EASTERN
ILLINOIS
UNIVERSITY



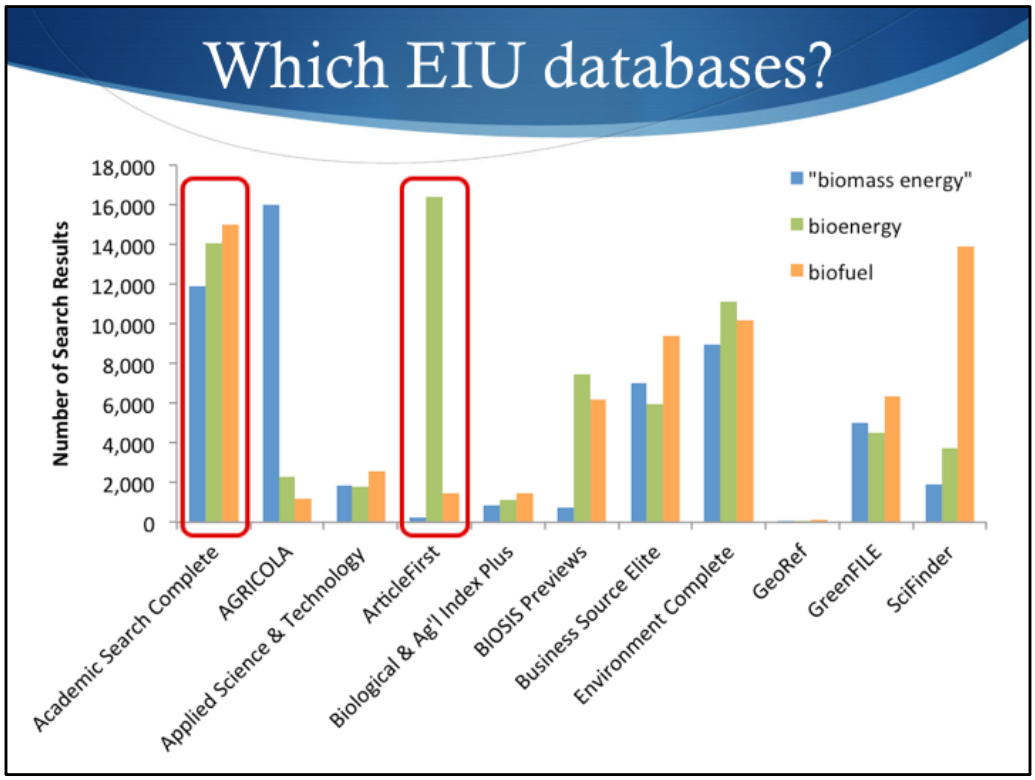

Number of results across 11 multidisciplinary and subject-specific databases using separate keyword searches on "biomass energy" (using quotation marks), bioenergy, and biofuel. Results were limited by publication date: earliest available in the database through 2013.

The Advanced Search was used for EBSCO and OCLC databases, the Multi-Field Search in Ovid databases, and Research Topic in SciFinder.

Interesting points:
Certain keywords return more than others, and this varies by database. AGRICOLA - "biomass energy"; ArticleFirst - bioenergy; SciFinder - "biofuel"; BIOSIS Previews - NOT "biomass energy"

Multidisciplinary database (ASC) returns most results overall.

Business Source Elite ranks high on total results found by searching on these keywords, above the biological sciences and technology databases - a surprise.

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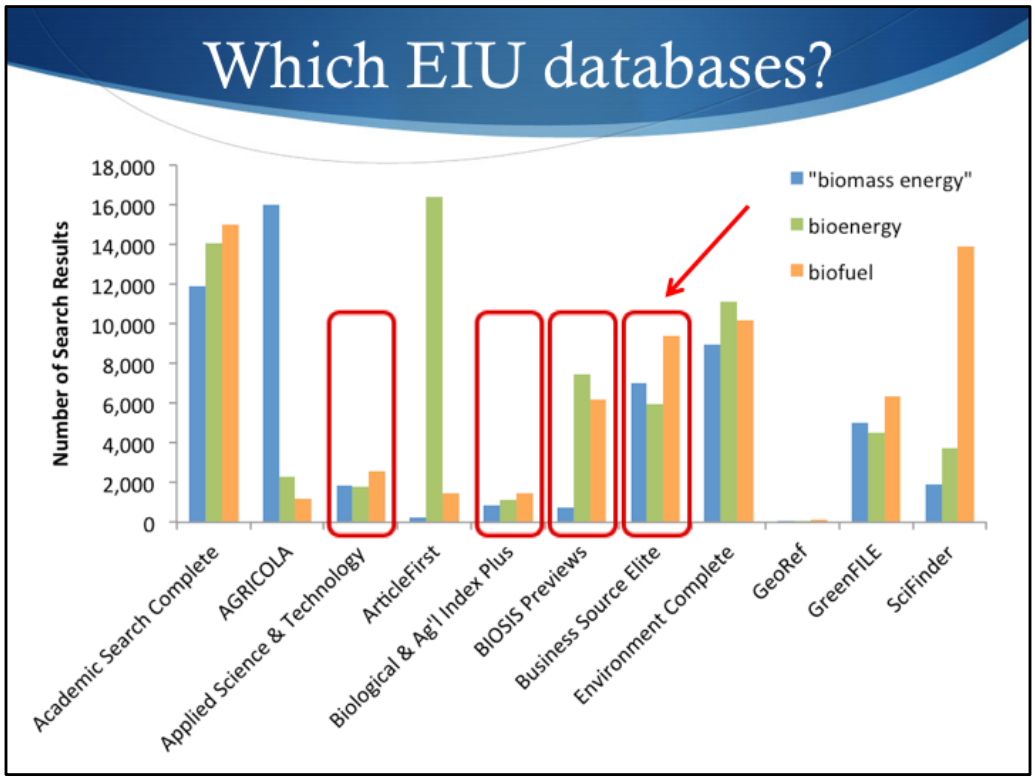


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Business Source Elite ranks high on total results found by searching on these keywords, above the biological sciences and technology databases - a surprise. Perhaps an engineering database would fare better, in comparison to Business Source Elite.

# Which EIU databases?

- Searching round 1. Sum of keyword search results (earliest → 2013), by database, for:
  - "biomass energy,"
  - bioenergy, and
  - biofuel.

| Database | No. of Results |
|---|---|
| Academic Search Complete | 40,975 |
| Environment Complete | 30,222 |
| Business Source Elite | 22,353 |
| SciFinder | 19,542 |
| AGRICOLA | 19,536 |
| ArticleFirst | 18,128 |
| GreenFILE | 15,847 |
| BIOSIS Previews | 14,407 |
| Applied Science & Technology | 6,232 |
| Biological & Agricultural Index Plus | 3,428 |
| GeoRef and GeoRef In Process | 181 |

Again, we see a multidisciplinary database returning the most results, the environmental multidisciplinary database faring pretty well, and the subject-specific databases providing fewer results, by comparison.

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Again, we see a multidisciplinary database returning the most results, although ArticleFirst, another general multidisciplinary database, provides less than half the results as Academic Search Complete.

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One environmental multidisciplinary database fares pretty well, while the other, GreenFILE, provides considerably fewer results.

# Which EIU databases?

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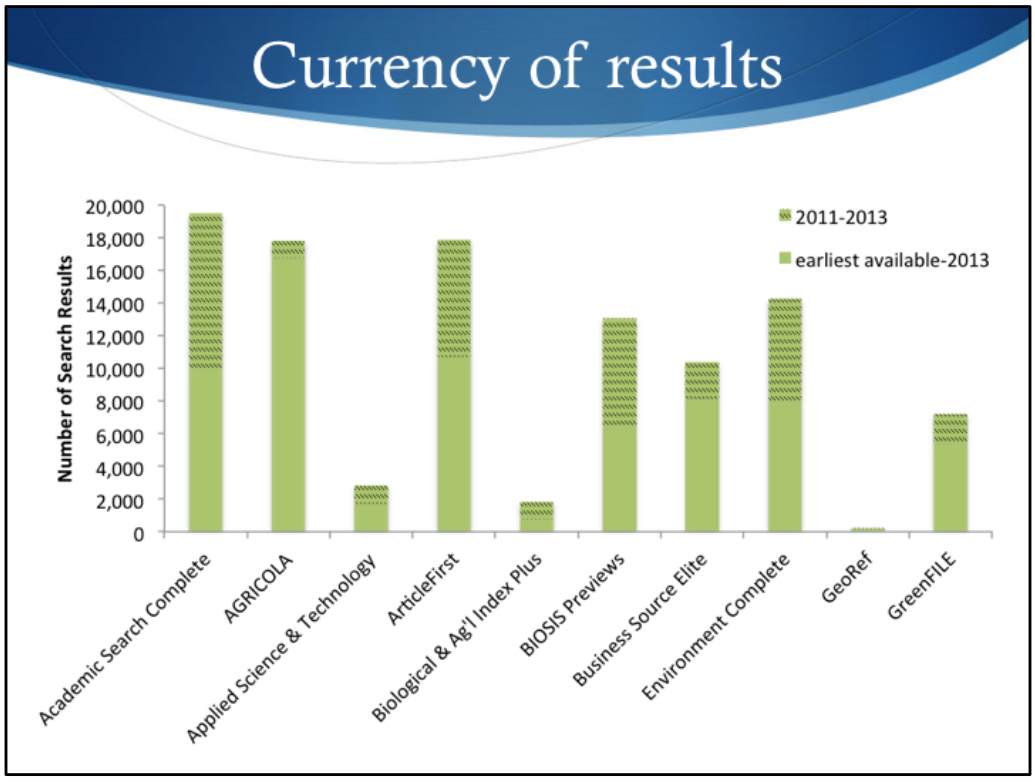
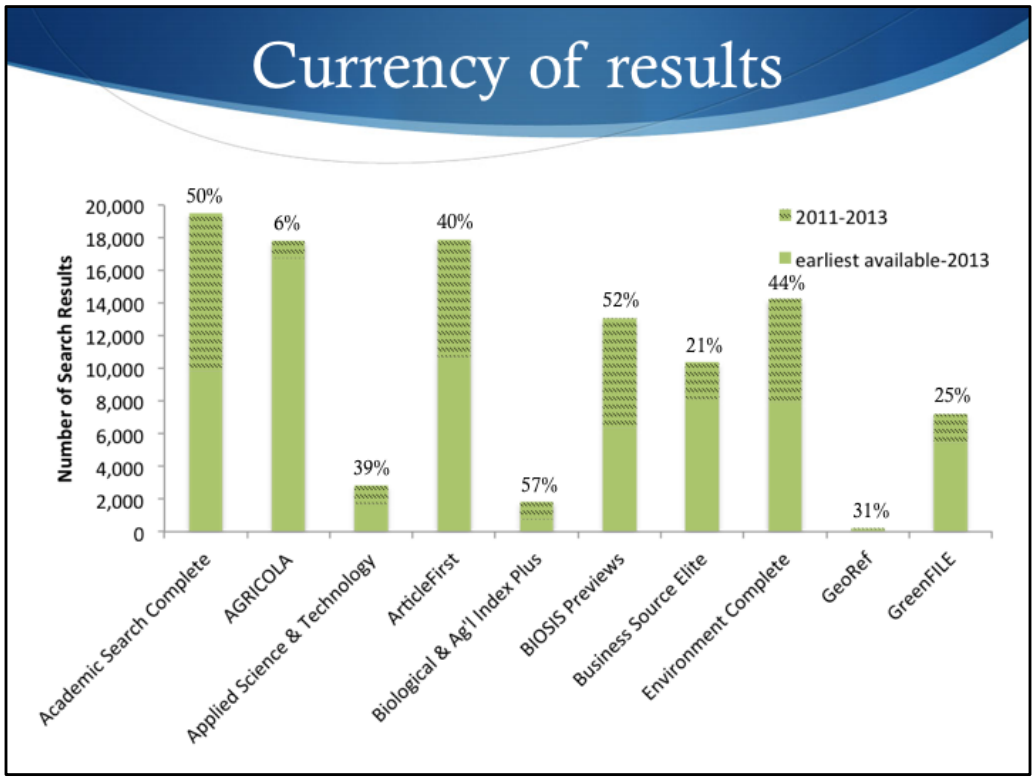
The subject-specific databases provide fewer results than some of the larger multidisciplinary databases.




Searching all three terms {"biomass energy" or bioenergy or biofuel} simultaneously in a database returns fewer results in each database, as some terms overlap within articles.

The field of bioenergy research has been growing rapidly in recent years. A large quantity of results across most of the databases have been published in the past 3 years.

AGRICOLA is the outlier in this case. This database includes resources that discuss bioenergy in terms other than how bioenergy is being applied in modern energy research applications. For example, there are many publications on the topic of wood heating.

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# Specificity of results

- Searching round 2. Number of results for search on {"biomass energy" OR bioenergy OR biofuel}, from earliest → 2013.

| Database | Default search results | Abstract search results | Title search results |
|---|---|---|---|
| Academic Search Complete | 19,519 | 10,267 | 4,054 |
| Environment Complete | 14,277 | 6,887 | 2,909 |
| Business Source Elite | 10,368 | 7,392 | 2,962 |
| AGRICOLA | 17,829 | 1,595 | 1,024 |
| ArticleFirst | 17,903 | n/a | 2,671 |
| GreenFILE | 7,227 | 4,617 | 2,095 |
| BIOSIS Previews | 13,071 | 5,489 | 2,343 |
| Applied Science & Technology | 2,821 | 1,422 | 669 |
| Biological & Agricultural Index Plus | 1,858 | 962 | 656 |
| GeoRef and GeoRef In Process | 167 | 104 | 71 |

Search 2. Number of results for search on
{"biomass energy" or bioenergy or biofuel}
using default search (e.g. All Fields). String of terms was then searched in abstract only or title only. Publication date was limited from earliest → 2013.

# Top subject headings

Searching round 2. 1500+ results

| Subject Heading | No. of Results |
|---|---|
| biomass energy | 24,752 |
| renewable energy sources | 6,353 |
| biomass | 3,458 |
| energy crops | 2,761 |
| ethanol as fuel | 2,625 |
| biodiesel fuels | 2,463 |
| research | 2,282 |
| energy consumption | 2,225 |
| biomass energy industries | 1,911 |
| fermentation | 1,549 |
| emissions (air pollution) | 1,518 |

Searching round 2. 6+ databases

| Subject Heading | No. of Dbs |
|---|---|
| biomass | 9 |
| renewable energy sources | 8 |
| biodiesel fuels | 6 |
| biomass energy industries | 6 |
| fermentation | 6 |
| fossil fuels | 6 |
| fuel | 6 |
| lignocellulose | 6 |

SHs with 1500 or more hits across the 7 EBSCO databases and SciFinder, which includes all the databases searched except AGRICOLA, BIOSIS Previews, and ArticleFirst.

SHs appearing in search results of 6 or more databases, which includes all the databases searched except ArticleFirst.

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SHs appearing in search results of 6 or more databases, which includes all the databases searched except ArticleFirst.

# Top journals

Searching round 2. 400+ results

| Journal | Hit Count |
|---|---|
| Biomass & Bioenergy | 6301 |
| Ethanol & Biofuels (Biodiesel) News* | 2930 |
| Bioresource Technology | 2152 |
| Energy Policy | 1398 |
| BioCycle* | 1352 |
| Environmental Science & Technology | 1125 |
| Renewable & Sustainable Energy Rvws | 816 |
| Energy | 806 |
| Applied Energy | 651 |
| Chemical & Engineering News | 626 |
| Renewable Energy | 591 |
| Farmers Weekly* | 566 |
| Int'l Journal of Hydrogen Energy | 487 |

Searching round 2. 4+ databases

| Journal | No. Dbs |
|---|---|
| Environmental Science & Technology | 8 |
| Bioresource Technology | 7 |
| Energy Sources Part A | 6 |
| Applied & Env'l Microbiology | 5 |
| BioCycle* | 5 |
| Biomass & Bioenergy | 5 |
| Applied Microbiology and Biotech. | 4 |
| Atmospheric Environment | 4 |
| Chemical & Engineering News | 4 |
| Energy | 4 |
| Journal of Biotechnology | 4 |
| Nature | 4 |
| PNAS | 4 |

Journals with 400 or more hits across the 7 EBSCO databases and SciFinder, which includes all the databases searched except AGRICOLA, BIOSIS Previews, and ArticleFirst.

Journals appearing in search results of 4 or more databases, which includes all the databases searched except ArticleFirst.

* → not peer reviewed

# Top journals

Searching round 2. 400+ results

| Journal | Hit Count |
|---|---|
| Biomass & Bioenergy | 6301 |
| Ethanol & Biofuels (Biodiesel) News* | 2930 |
| Bioresource Technology | 2152 |
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| Energy | 806 |
| Applied Energy | 651 |
| Chemical & Engineering News | 626 |
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| Int'l Journal of Hydrogen Energy | 487 |

Searching round 2. 4+ databases

| Journal | No. Dbs |
|---|---|
| Environmental Science & Technology | 8 |
| Bioresource Technology | 7 |
| Energy Sources Part A | 6 |
| Applied & Env'l Microbiology | 5 |
| BioCycle* | 5 |
| Biomass & Bioenergy | 5 |
| Applied Microbiology and Biotech. | 4 |
| Atmospheric Environment | 4 |
| Chemical & Engineering News | 4 |
| Energy | 4 |
| Journal of Biotechnology | 4 |
| Nature | 4 |
| PNAS | 4 |

Journals with 400 or more hits across the 7 EBSCO databases and SciFinder, which includes all the databases searched except AGRICOLA, BIOSIS Previews, and ArticleFirst.

Journals appearing in search results of 4 or more databases, which includes all the databases searched except ArticleFirst.


ScienceWatch (Thomson Reuters) – 1998-Apr 30, 2008
SCImago (Elsevier) – 2012
Science Tracer Bullets Online (LOC) – 3 matching titles (Biomass & Bioenergy; Bioresource Technology; Renewable and Sustainable Energy Review)

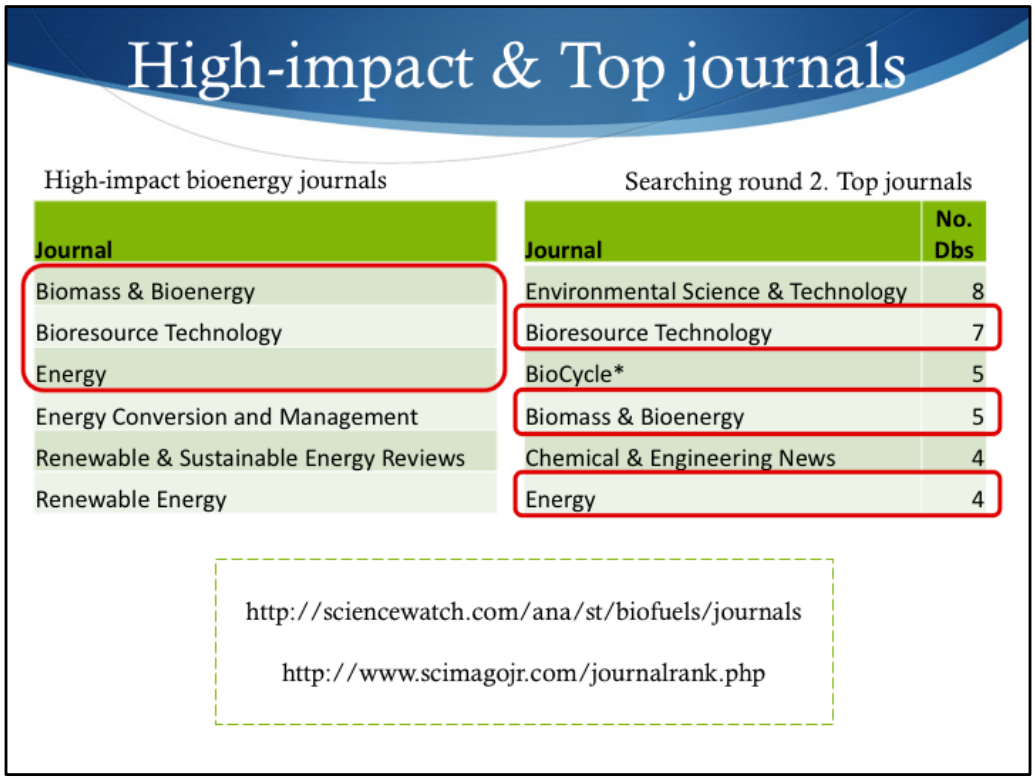
# High-impact & Top journals

High-impact bioenergy journals

| Journal |
|---|
| Biomass & Bioenergy |
| Bioresource Technology |
| Energy |
| Energy Conversion and Management |
| Renewable & Sustainable Energy Reviews |
| Renewable Energy |

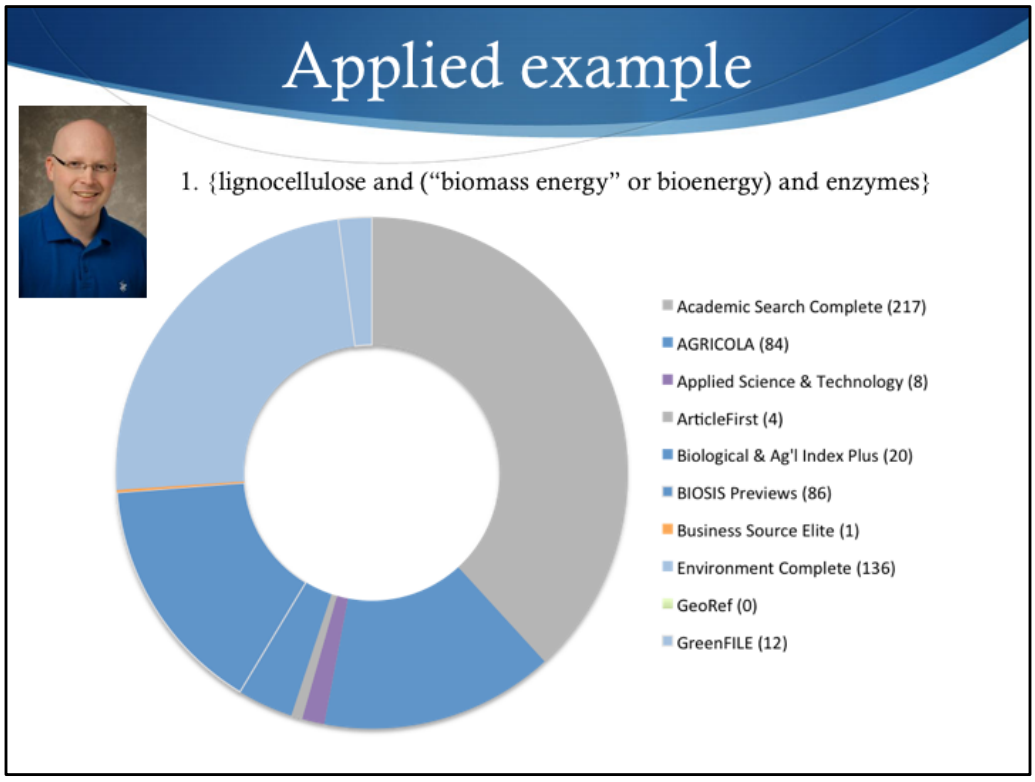
Searching round 2. Top journals

| Journal | No. Dbs |
|---|---|
| Environmental Science & Technology | 8 |
| Bioresource Technology | 7 |
| BioCycle* | 5 |
| Biomass & Bioenergy | 5 |
| Chemical & Engineering News | 4 |
| Energy | 4 |



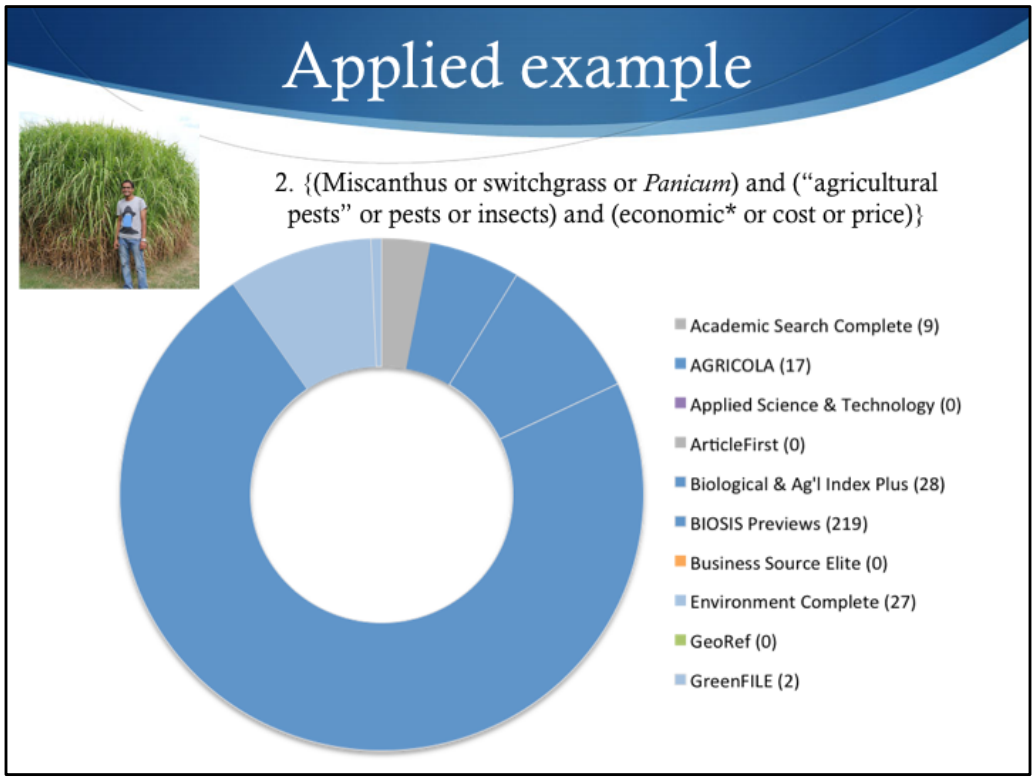

… although Renewable & Sustainable Energy Reviews, as well as Renewable Energy, also on Top Journals expanded list
EIU picks to add to subscription list, based on price and indexing service availability:
- Bioresource Technology (Elsevier, indexed in Env Comp)
- Fuel (Elsevier, indexed in ASC)
- Biomass & Bioenergy (Elsevier, indexed in Env Comp)

EIU already subscribes to:
- Biomass Bulletin* (Multi-Science Publishing, indexed in Env Comp)
- Bioresources (North Carolina State University, College of Natural Resources, OPEN ACCESS, indexed in ASC)
- Environmental Science & Technology (ACS Pubs, indexed in ACS Pubs)
- Journal of Industrial Ecology (Wiley-Blackwell, indexed in ASC/Env Comp)
- Environmental Science & Technology (ACS Pubs, indexed in ACS Pubs)
- BioCycle (JG Press, indexed in ASC, Biz, Env Comp)
- Farmers Weekly (Farmers Weekly Group, indexed in LexisNexis/ASC/Bio&Ag)
- Applied and environmental microbiology (American Society for Microbiology, indexed in HighWire Press)
- Applied microbiology and biotechnology (Springer, indexed in SpringerLink/ASC/Env Comp)
- Nature (Nature Publishing Group, indexed in ASC)
- PNAS (National Academy of Sciences, ASC)




The last phase of this research project was to apply a realistic research question, search across the enlisted databases, and identify the types of databases returning the most results for a given question.

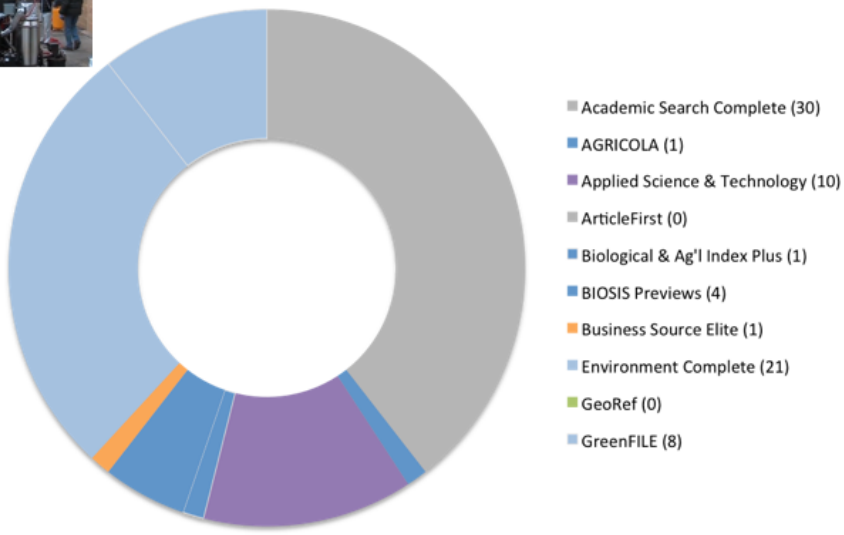
The first example draws upon the research currently being conducted in the Canam lab at EIU. They are working to identify enzymes that will assist in the separation of cellulose (the high energy plant material) from the lignin (which gives plants their structure) to which it is tightly bound




"energy crops"
Panicum virgatum
Economic analysis, economic impact, economic aspects

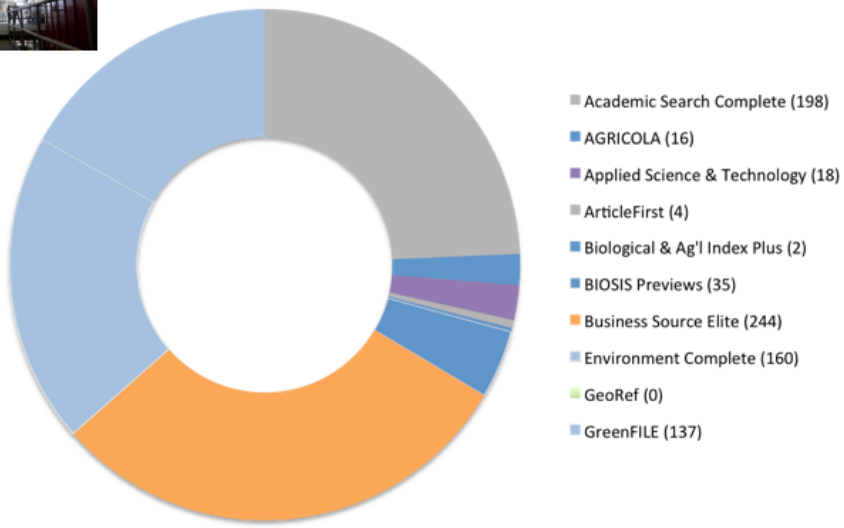
# Applied example

3. {"biomass gasification" and "thermal efficiency"}



# Applied example

4. {("biomass energy" or bioenergy) and "energy industry"}



# Take-home points

- Start with a broad, multi-disciplinary database, like *Academic Search Complete*; move into environmental and subject-specific databases, like *Environment Complete* and *AGRICOLA* and even *Business Source Elite*
- Consider frequently used terminology, like *biomass energy*, *renewable energy sources*, and *biodiesel fuels*
- Be aware of high-impact and frequently occurring journals appearing in search results, like *Biomass & Bioenergy*, *Bioresource Technology*, and *Energy*

# Thank you.
# Questions?

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