MyResearch Graduate Seminar Series
Module 3: Search Strategies and Techniques

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Macdonald Campus Library
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Learn how to choose search terms from your research topic

Understand how to search in databases

Find out about how to keep up with your research through mobile apps and email alerts

What’s next in MyResearch?
Steps to searching

1. Define your question and break it down into its separate concepts
2. Identify database(s) to search
3. Develop a search strategy and run your search
   - Search each concept separately
   - Combine search terms (AND/OR)
   - Apply limits
4. Evaluate your results and modify your search
Start with your research question

Do genetically engineered crops pose a threat to ecological welfare?
Do genetically engineered crops pose a threat to ecological welfare?
Strategies to generate search terms

- Subject headings/controlled vocabulary
  - Databases and articles
- Build from your own knowledge base
  - Internal dictionary/vocabulary that you’ve developed
- Reading articles and books
  - Familiarize yourself with terms used
- Concept mapping
  - Mapping relationships between terms, categories, sub-categories
Why bother with subject headings?

- Genetically engineered organism
- Genetically modified organism
- GEO
- GMO
Keywords in databases

Stay-green traits to improve wheat adaptation in well-watered and water-limited environments

Abstract: A stay-green phenotype enables crops to retain green leaves longer after anthesis compared with senescent types, potentially improving yield. Measuring the normalized difference vegetative index (NDVI) during the whole senescence period allows quantification of component stay-green traits contributing to a stay-green phenotype. These objective and standardized traits can be compared across genotypes and environments. Traits examined include maximum NDVI near anthesis (Nmax), senescence rate (SR), a trait integrating senescence (SGint), plus time from anthesis to onset (OnS), mid-point (MidS), and near completion (EndS) of senescence. The correlation between stay-green traits and yield was studied in eight contrasting environments ranging from well watered to severely water limited. Environments were each classified into one of the four major drought environment types (ETs) previously identified for the Australian wheat cropping system. SGint, OnS, and MidS tended to have higher values in higher yielding environments for a given genotype, as well as for higher yielding genotypes within a given environment. Correlation between specific stay-green traits and yield varied with ET. In the studied population, SGint, OnS, and MidS strongly correlated with yield in three of the four ETs which included well-watered environments (0.43-0.86), but less so in environments with only moderate water-stress after anthesis (-0.03 to 0.31). In contrast, Nmax was most highly correlated with yield under moderate post-anthesis water stress (0.31-0.43). Selection for particular stay-green traits, combinations of traits, and/or molecular markers associated with the traits could enhance genetic progress toward stay-green wheats with higher, more stable yield in both well-watered and water-limited conditions.
Subject headings in databases

Stay-green traits to improve wheat adaptation in well-watered and water-limited environments

Subject Headings:
- analysis
- crop production
- cropping systems
- crops
- drought
- flowering
- genetic markers
- genotype environment interaction
- genotypes
- leaves
- molecular genetics
- phenotypes
- plant breeding
- quantitative analysis
- senescence
- stress
- water stress
- wheat
- yields
# Keywords vs Subject Headings

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Subject Heading</th>
</tr>
</thead>
<tbody>
<tr>
<td>“natural language”</td>
<td>“controlled vocabulary”</td>
</tr>
<tr>
<td>Database will search multiple fields</td>
<td>Database will search descriptor field</td>
</tr>
<tr>
<td>May not be the focus of the article</td>
<td>Process involves humans, so results will be more relevant</td>
</tr>
<tr>
<td>Does not take the meaning of the word into account</td>
<td><strong>Meaning</strong> of the word is considered ex. mouse (rodent) vs. mouse (computer mouse)</td>
</tr>
<tr>
<td>Can yield irrelevant results</td>
<td><strong>Standard list</strong> of terms defines related synonyms</td>
</tr>
<tr>
<td>Necessary if database does not have a controlled vocabulary, or if subject heading does not exist for your term</td>
<td>Different in each database</td>
</tr>
</tbody>
</table>

*McGill Library. Everything you need.*
<table>
<thead>
<tr>
<th>genetically engineered</th>
<th>crops</th>
<th>ecological welfare</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR Transgenic</td>
<td>Plants</td>
<td>Biodiversity</td>
</tr>
<tr>
<td>OR Genetically modified</td>
<td>Fruit crops</td>
<td>Species diversity</td>
</tr>
<tr>
<td>OR GMO</td>
<td></td>
<td>Biological diversity</td>
</tr>
<tr>
<td>OR GEO</td>
<td></td>
<td>Genetic diversity</td>
</tr>
</tbody>
</table>
Exercise

- Describe your research topic and circle the main concepts
- Copy the main concepts below and brainstorm synonyms
- Share your topic and your concepts with your neighbour. Discuss possible other synonyms. Add them to your chart.
- Stop here! The next steps will come later!
Identify database(s)
Identify database(s)

Multidisciplinary

- Web of Science
- Scopus
- Google Scholar

Subject-Specific

- Biosis Previews
- CAB Abstracts
- Agricola
- And more...
Google Scholar

**Pros**
- Easy to use
- Has a citation index (like WoS and Scopus)
- Great for grey literature
- Interdisciplinary

**Cons**
- Doesn’t recognize advanced search techniques
- Date range is unreliable
- Many resources NOT available through Google Scholar
- Lack of transparency

**Set Scholar Preferences**
- Find it at McGill
- EndNote/RefWorks links
## Getting to a database

### Use the Library
- Library account
- Article scan service
- Interlibrary loan (ILL)
- Questions? Ask Us!
- Find a librarian
- Hours
- Room booking
- Computers & software
- uPrint: scan, print, copy
- Borrowing books, etc
- Workshops

### Find
- Databases A-Z
- E-journals A-Z
- Course reserves
- Course guides
- Citation guides
- Reference materials
- Theses & dissertations
- Newspapers
- Maps & geospatial data
- Government information
- Audio/visual materials

### Subject guides
- Agriculture & environmental sciences
- Art, architecture & urban planning
- Education
- Engineering
- Health & biological sciences
- Humanities
- Law
- Management & business
- Music
- Physical sciences
- Social sciences

Search WorldCat for books, articles, etc.

Advanced search Classic Catalogue
**Boolean operators**

**AND**
(crops AND biodiversity)  
*Restricts a search*  
All words/concepts appear in the results

**OR**
(crops OR plants)  
*Expands a search*  
Results contain either one or both words/concepts

**NOT**
(crops NOT wheat)  
*Restricts a search*  
Excludes results with the words/records
transgenic AND crops OR plants

is not the same as...

transgenic AND (crops OR plants)
Truncation and proximity

Search alternate endings of a word:

- dispers* → disperses
- dispersed
- dispersal
- dispersing
- dispersion
Use quotation marks around keywords to search a phrase:

**Biological diversity**  vs.  **biological AND diversity**

*Keywords may be found together or separated*

**“biological diversity”**  vs.  **Biological diversity**

*Keywords will be found together*
Phrase searching

Use quotation marks around keywords to search a phrase:

Biological diversity  vs.  "biological diversity"

Diversity  Bla bla bla Bla bla bla Bla bla bla biological  Bla bla bla Bla bla bla

You can also use proximity instead:

Biological adj3 diversity

Biological urges explain diversity

Biological diversity
Search query

<table>
<thead>
<tr>
<th>Genetically engineered</th>
<th>Crops</th>
<th>Ecological welfare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetically modified</td>
<td>Plants</td>
<td>Biodiversity</td>
</tr>
<tr>
<td>Transgenic</td>
<td></td>
<td>Species diversity</td>
</tr>
<tr>
<td>GMO</td>
<td></td>
<td>Biological diversity</td>
</tr>
</tbody>
</table>

\[(\text{genetic}^{\ast} \ \text{AND} \ (\text{engineer}^{\ast} \ \text{OR} \ \text{modif}^{\ast})) \ \text{OR} \ \text{transgenic}^{\ast} \ \text{OR} \ \text{GMO}\]
Search each concept separately

<table>
<thead>
<tr>
<th>#</th>
<th>Searches</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>exp biodiversity/</td>
<td>53539</td>
</tr>
<tr>
<td>2</td>
<td>((spec* or biolog* or genetic*) adj3 diversity).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]</td>
<td>133583</td>
</tr>
<tr>
<td>3</td>
<td>(Ecological adj3 welfare).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]</td>
<td>84</td>
</tr>
<tr>
<td>4</td>
<td>1 or 2 or 3</td>
<td>169006</td>
</tr>
</tbody>
</table>

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Search each concept separately

<table>
<thead>
<tr>
<th></th>
<th>Searches</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1 or 2 or 3</td>
<td>169006</td>
</tr>
<tr>
<td>5</td>
<td>exp genetically engineered organisms/</td>
<td>57853</td>
</tr>
<tr>
<td>6</td>
<td>((genetic* and (engineer* or modif*)) or transgenic*).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]</td>
<td>122088</td>
</tr>
<tr>
<td>7</td>
<td>5 or 6</td>
<td>122088</td>
</tr>
</tbody>
</table>
Combine searches with AND
Limit your search

### Limit options:

- Abstracts
- Full Text & CAB Abstracts Fulltext
- English Language
- Latest Update
- Full Text
- Ovid Full Text Available

#### Publication Year

To select or remove multiple items from a list below, hold down the Shift, Ctrl, or "Apple" key while selecting.

### CAB Fulltext

- CAB Desc. Fungi and Bacteria
- CAB Maps of Plant Diseases
- CAB Maps of Plant Pests
- CAB Reviews Archive
- CAB Reviews: Perspectives

### Publication Types

- Abstract only
- Annual report
- Annual report section
- Book
- Book chapter

### Year Published

- Last Year
- Last 2 Years
- Last 3 Years
- Last 4 Years
- Last 5 Years

### Languages

- Afrikaans
- Albanian
- Amharic
- Arabic
- Armenian

### Star Ranking

- Five Stars (0)
- Four Stars (0)
- Three Stars (0)
- Two Stars (0)

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Exercise

- Choose a subject-specific database
- Find subject headings (if applicable)
- Construct a search using subject headings and keywords (if applicable)
- Try a second database if you have time
Keeping up with your research

- Alerts
- Mobile apps on your tablet
Keeping up with your research: database alerts

• Most databases allow you to set up alerts based on the searches you create

• Receive results as an email
Keeping up with your research: journal alerts

• Receive the table of contents of your favourite journals

• Available from most journal publishers

• Use Current Awareness guide to find links to publishers
BrowZine allows you to:

- Read complete scholarly journals in a browsable format on your tablet.
- Create a personal bookshelf of your favourite journals for which McGill has a subscription.
- Get alerts when new issues of journals are published.
- Available for iPads and Android tablets

http://www.mcgill.ca/library/services/computers/mobile
Create a bookshelf with your favorite journals
Read and share the articles directly from the app.
Save your favourite articles
Module 4 – Getting Your Research Out

• Find where to publish
• Impact factors and citation analysis
• Open access and institutional repositories
• Copyright transfer agreement
• Academic integrity and intellectual property

See you next time!
What’s next in MyResearch?

MODULE 4:
Getting Your Research Out
Wednesday, Feb. 15
10:30 a.m. to 12:30 p.m.

• Knowing where and how to publish and present
• Managing your research portfolio
• Finding your professional associations and networking opportunities
Questions?

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