

## Power Searching in Web of Science and Biological Abstracts:

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### Steps for searching in any database:

1. Frame your topic as a research question, thesis or hypothesis
2. Identify the concepts
3. Find alternate spellings and endings, synonyms, and related words for each concept
4. For each concept, combine synonyms and related terms with Boolean operator OR
5. Combine the concepts with Boolean AND to find articles that contain at least one of the words from each concept
6. Run a test search in the database that contains the required information
7. If you have too many results, refine by searching within the results and/or limiting the search to a date range or a major subject, etc
8. If you don't have enough results, broaden the search by adding keywords to the concepts or by removing extraneous concepts.

### Constructing a Research Strategy

#### Step 1: Frame your research topic as a question:

e.g. How do plants protect themselves chemically against insects?

#### Step 2: Identify the Main Concepts (keywords) in your topic - nouns only:

e.g. plants -- protect -- chemically -- insects

#### Step 3: Find synonyms or related terms for your keywords, and use the truncation symbol \*at the end of the root of each word to pick up variant spellings and endings

e.g. variant spellings, and using truncation symbols:

plant\* = plant OR plants

protect\* = protect OR protects OR protection

chemical\* = chemically OR chemicals OR chemical

insect\* = insect OR insects

synonyms and related words:

Plant\* = tree\* OR shrub\* OR bush\* OR flower\* etc.

Protect\* = defense OR defence OR defend = defen\*

**NOTE: some words are spelled differently in Canadian English vs. US English, and you will need to accommodate the variations using the truncation symbol.**

defense (US) ; defence (Canada) = defen\*(this will pick up both spellings)

**Step 4: Combine all the synonyms, variant spellings and related terms for each concept with the Boolean operator OR and enclose them in brackets if there is more than one word per concept**

e.g. (plant\* OR tree\* OR shrub\* OR bush\* OR flower\*)  
(protect\* OR defen\*)

**Step 5: Combine all the concepts with the Boolean operator AND to find only those items that include all of the concepts. This search strategy can be used to find books in the library catalogue and articles in a research database. Even though the interfaces of databases differ, these same principles apply to the research process in most databases.**

e.g. (plant\* OR tree\* OR shrub\* OR bush\* OR flower\*) AND (protect\* OR defen\*) AND chemical\* AND insect\*

### Searching in Web of Science OR Biological Abstracts

Run a keyword search in either database using the search strategy you constructed above.

- Running a separate search with each concept will give you more flexibility in the search process.

**Search 1:** (plant\* OR tree\* OR shrub\* OR bush\* OR flower\*)

**Search 2:** (protect\* OR defen\*)

**Search 3:** chemical\*

**Search 4:** insect\*

Use the database COMBINE feature to combine concepts with AND to find the intersection of groups of articles. This allows you to “mix and match” concepts without having to retype the whole string of terms e.g.

**Search 5:** #1 AND #2 AND #3 AND #4

- OR you can combine the searches at the outset (the more obvious way of searching) by entering search terms into each search box, and changing all the fields to “topic”:

The screenshot shows the Biological Abstracts search interface. It features a search form with the following elements:

- Search for:** A label above the first search box.
- Search Box 1:** Contains the text "plant\* OR tree\* OR shrub\* OR bus\* OR flower\*" and an example "Example: bird\* migrat\* alaska\*". To its right is a dropdown menu with "Topic" selected and circled in red.
- Search Box 2:** Preceded by a dropdown menu with "AND" selected. Contains the text "protect\* OR defen\*" and an example "Example: bird\* migrat\* alaska\*". To its right is a dropdown menu with "Topic" selected and circled in red.
- Search Box 3:** Preceded by a dropdown menu with "AND" selected. Contains the text "chemical\*" and an example "Example: bird\* migrat\* alaska\*". To its right is a dropdown menu with "Topic" selected and circled in red.
- Search Box 4:** Preceded by a dropdown menu with "AND" selected. Contains the text "insect\*" and an example "Example: bird\* migrat\* alaska\*". To its right is a dropdown menu with "Topic" selected and circled in red.
- Buttons:** "Add Another Field >>" (purple text), "Search" (yellow button), and "Clear" (yellow button).

- When your search is too broad and you get hundreds or even thousands of results, you can narrow your search using the different refining features and facets of the database. Try each of the following ways to narrow your search:

- a. Search within the results (see the search box in the Refine bar on the left) will refine the search by adding more concepts to it.

**Results** Topic=(plant\*) AND Topic=(protect\* OR defen\*) AND Topic=(chemical\*) AND Topic=(insect\*)  
Timespan=All Years. Databases=ABSTRACTS.  
Refined by: Topic=(caffeine)

Results: **5,529** Page 1 of 55

**Refine Results**  
Search within results for:  Search

**Major Concepts** Refine

- ECONOMIC ENTOMOLOGY (2,788)
- PEST ASSESSMENT CONTROL

1. Title: Effect of talc-formulated entomopathogenic fungus Beauveria against leafhopper (Cnaphalocrosis medialis) in rice  
Author(s): Sivasundaram, V.; Rajendran, L.; Muthumeena, K., et al.  
Source: World Journal of Microbiology & Biotechnology Volume: 24 Issue: 7  
Pages: 1123-1132 Published: JUL 2008

- b. Limit the results to a grouping such as Subject Area, Date Range, Literature Type, etc.

**Refine Results**  
Search within results for:

**Major Concepts** Refine

- ECONOMIC ENTOMOLOGY (2,788)
- PEST ASSESSMENT CONTROL

**Literature Types** Refine

- LITERATURE REVIEW (218)
- EDITORIAL (0)
- STANDARD (7)
- ERRATA (3)
- MEETING REPORT (3)

**Major Concepts** Refine Exclude Cancel Sort these by: Record Count

The first 100 Major Concepts (by record count) are shown. For advanced refine options, use Analyze results.

- INFECTION (395)
- IMMUNE SYSTEM (232)
- PHARMACOLOGY (180)
- VETERINARY MEDICINE (180)
- EPIDEMIOLOGY (100)
- WILDLIFE MANAGEMENT (97)
- PUBLIC HEALTH (95)
- VECTOR BIOLOGY (92)
- MICROBIOLOGY (82)
- NERVOUS SYSTEM (82)
- ECOLOGY (48)
- PARASITOLOGY (8)
- POPULATION STUDIES (8)
- BLOOD AND LYMPHATICS (7)
- SYSTEMATICS AND TAXONOMY (7)
- TERRESTRIAL ECOLOGY (7)
- TOXICOLOGY (7)
- VIROLOGY (7)
- GENERAL LIFE STUDIES (6)
- PEST ASSESSMENT CONTROL AND MANAGEMENT (6)
- ANIMAL HUSBANDRY (6)
- REPRODUCTION (2)
- SKELETAL SYSTEM (2)
- ANIMAL CARE (1)
- CARDIOVASCULAR MEDICINE (1)
- CLINICAL ENDOCRINOLOGY (1)
- CLINICAL IMMUNOLOGY (1)
- DENTAL MEDICINE (1)
- DERMATOLOGY (1)
- DIGESTIVE SYSTEM (1)
- CLINICAL NEUROLOGY (1)
- DENTISTRY (1)
- EDUCATION (1)

1. Title: Caffeine production in three coffee N-methyltransferase genes  
Author(s): Uefuji, Hirota  
Source: Plant Molecular Biology Volume: 68 Issue: 3  
Published: SEP 2005

- c. Go back to the original search and modifying the number of synonyms and related terms used within individual concepts to broaden or refine the search.

Results page:

**Biological Abstracts**

**Results** Topic=(plant\* OR tree\* OR shrub\* OR bush\* OR flower\*) AND Topic=(protect\* OR defen\*) AND Topic=(chemical\*) AND Topic=(insect\*)  
Timespan=All Years. Databases=ABSTRACTS.

Results: **5,789** Page 1 of 579 Go

**Refine Results**  
Search within results for:

**Major Concepts** Refine

- ECONOMIC ENTOMOLOGY (2,972)
- PEST ASSESSMENT CONTROL AND MANAGEMENT (2,440)
- BIOCHEMISTRY AND MOLECULAR BIOPHYSICS (1,770)
- PHYSIOLOGY (1,382)
- PATHOLOGY (1,279)

**Authors** Refine

- BALDWIN, IAN T. (32)
- HARTMANN, THOMAS (19)
- BROWNE, J.H. (18)

1. Title: Effect of talc-formulated entomopathogenic fungus Beauveria against leafhopper (Cnaphalocrosis medialis) in rice  
Author(s): Sivasundaram, V.; Rajendran, L.; Muthumeena, K., et al.  
Source: World Journal of Microbiology & Biotechnology Volume: 24 Issue: 7  
Pages: 1123-1132 Published: JUL 2008

2. Title: Characterization of the monoterpene synthase gene tps26, the ortholog of a gene induced by insect herbivory in maize  
Author(s): Lin, Changfa; Shen, Binzhang; Xu, Zhennan, et al.  
Source: Plant Physiology (Rockville) Volume: 146 Issue: 3 Pages: 940-951  
Published: MAR 2008

3. Title: In defense of roots: A research agenda for studying plant resistance to

## Search History page:

**Search History**

Set	Results	Save History	Open Saved History	Combine Sets	Delete Sets
#4	Approximately 1,115,855	Save History	Open Saved History	AND OR Combine	Select All Delete
#3	Approximately 5,691,713	Save History	Open Saved History	AND OR Combine	Select All Delete
#2	Approximately 2,095,542	Save History	Open Saved History	AND OR Combine	Select All Delete
#1	Approximately 4,683,007	Save History	Open Saved History	AND OR Combine	Select All Delete
#5	Approximately 9,648	Save History	Open Saved History	AND OR Combine	Select All Delete

Search criteria for Set #5: Topic=(insect\*) AND Topic=(chemical\*) AND Topic=(protect\* OR defen\*) AND Topic=(plant\* OR tree\* OR shrub\* OR bush\* OR flower\*)  
Timespan=All Years  
Search language=English Lemmatization=On

**Is that article available in full text in the library? (hint: click on **Find it @ York**)**

1. If it is available electronically, those links will appear at the top of the SFX window.
2. If not, check the library catalogue link to see if we have it in print.
3. If the library does not subscribe to the journal, sign up for a RACER account to request that the article be delivered electronically to your desktop. You can request 25 per year free of charge!

**Results** Topic=(plant\* and chemical\*) AND Topic=(protect OR defen\*) AND Topic=(insect\*)  
Refined by: Topic=(caffeine)  
Timespan=All Years. Databases=Biological Abstracts.  
Lemmatization=On

Note: Alternative forms of your search term (for example, tooth and teeth) may have been applied, in particular for Topic or Title searches that do not contain quotation marks around the terms. To find only exact matches for your terms, turn off the "Lemmatization" option on the search page.

Results: 8 Page 1 of 1 Go

Refine Results

Search within results for [ ] Search

Major Concepts Refine

- AGRICULTURE (6)
- HORTICULTURE (5)
- PEST ASSESSMENT CONTROL AND MANAGEMENT (5)
- BIOCHEMISTRY AND MOLECULAR BIOPHYSICS (3)
- AGRONOMY (2)

1. Title: **Induced responses of Coffea arabica to attack of Coffea...**  
stimulate locomotion of the herbivore  
Author(s): Fernandes Flavio Lemes; Picanco Marcelo Coutinho; Costa; et al.  
Source: Entomologia Experimentalis et Applicata Volume: 139  
120-127 DOI: 10.1111/j.1570-7458.2011.01113.x Published: 2011

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2. Title: ...genetic tobacco plants producing caffeine: a potential new strategy for insect pest control

Title: Induced responses of Coffea arabica to attack of Coffea...  
Source: Entomologia experimentalis et applicata [0013-8703]

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## Export Results to RefWorks

Scroll down to the bottom of the results page to select export criteria:

N.B. make sure you import the Full Record in Step 2

**Output Records**

Step 1:

- Selected Records on page
- All records on page
- Records [ ] to [ ]

Step 2:

- Authors, Title, Source
- plus Abstract
- Full Record

Step 3: [How do I export to bibliographic management software?]

Save to: EndNote Web EndNote

RefWorks ResearcherID

Save to Other Reference Software Save