

Comparison of citation databases SCOPUS and Web of Science: Czech and Slovak agricultural and related disciplines

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Since the year 1964, when its first citation index Science Citation Index was introduced, is database Web of Science known as a reliable statistical tool for evaluation of research in the area of natural sciences. In the year 2005 the first competitor

of this database emerged – Elsevier’s database SCOPUS. For users it is crucial to find out which of these databases covers better subjects of agricultural and related sciences, which was also our initiative (Table 1).

Table 1. Basic overview of Web of Science and SCOPUS

	Web of Science	SCOPUS
Number of records	36 million	27 milion
Oldest record	1900	1966
Number of indexed peer-reviewed journals	9300	14 200

METHODS

Our research had two objectives:

- To compare citation databases of Web of Science (WOS) and SCOPUS in number of citations from Czech and Slovak Universities;
- To compare the title overlap in both databases and to find the “core titles” in the area of agriculture and related sciences.

In both databases we have generated a list of all citations of Czech University of Agriculture in Prague (CUA), Mendel University of Agriculture and Forestry, Brno (MUAF), Slovak Agricultural University Nitra (SAU) and Faculty of Agronomy, South Bohemian University (JU).

As the researched universities have different time span of their citation, we limited the time

span of all citations from 1995 till 2005. According to this data we have generated a chart comparing a number of citations from WOS and SCOPUS for each of the researched universities.

As a second part of our research we have analyzed citations from WOS and SCOPUS for each university to find out the most important journals (i.e. journals with most citations).

RESULTS

The number of articles published by each university could not be an objective criterion for evaluation of quality. Instead we have found the major specializations of research and the most important journals of each university.

Table 2. Faculty of Agronomy, South Bohemian University

Web of Science		SCOPUS	
Title	number of citations	Title	number of citations
<i>Czech Journal of Animal Science</i>	23	<i>Plant, Soil and Environment*</i>	19
<i>Plant, Soil and Environment</i>	16	<i>Czech Journal of Animal Science</i>	17
<i>Food Chemistry</i>	13	<i>Veterinárni Medicína</i>	12
<i>Acta Veterinaria Brno</i>	12	<i>Food Chemistry</i>	7
<i>Živočišná Výroba</i>	7	<i>Acta Veterinaria Brno</i>	8

*as the journal *Plant, Soil and Environment* is a successor of the title *Rostlinná Výroba*, citations in both journals are counted as if they were all published in journal *Plant, Soil and Environment*

The Czech University of Agriculture in Prague (CUA) shows the biggest difference in article count between the databases WOS (409) and SCOPUS (848). Most of the authors from CUA publish their articles in European scientific journals, which are covered neither in WOS nor in SCOPUS. SCOPUS contains CUA articles from 160 scientific journals in comparison to 124 in WOS; this also displays a growing specialization of authors and their research objectives.

The authors from **the Mendel University of Agriculture and Forestry, Brno (MUAF)** publish mostly in *Czech Journal of Animal Science* and *Ekológia Bratislava* (27% of all articles found in WOS). In total MUAF has more articles in WOS (568) than in SCOPUS (238). As in the case of CUA, approx. 42% of all articles in WOS and 56% of articles in SCOPUS were published in 131 titles (WOS) and in 37 titles (SCOPUS).

The Faculty of Agronomy, South Bohemian University (JU) is the smallest unit in our research. Due to the size of staff the number of published articles is smaller in comparison with the Czech

University of Agriculture in Prague and the Mendel University of Agriculture and Forestry, Brno. In WOS there are 146 articles, in SCOPUS 120. The majority of articles were published in *Czech Journal of Animal Science* and *Rostlinná výroba* (now *Plant, Soil and Environment*).

The Slovak Agricultural University, Nitra (SAU) has a similar number of articles as JU: 80 in WOS and 122 in SCOPUS. As an important specialization we can see physics, chemistry and environmental sciences; they are published for example in *Journal of Environmental Science and Health* and *International Agrophysics*.

Charts with top five journals for each university are given in Tables 2–5.

DISCUSSION

Differences between the databases

Results for CUA, MUAF, JU and SAU reveal significant differences between WOS and SCOPUS.

Table 3. Mendel University of Agriculture and Forestry, Brno

Web of Science		SCOPUS	
Title	number of citations	Title	number of citations
<i>Czech Journal of Animal Science</i>	101	<i>Czech Journal of Animal Science</i>	42
<i>Plant, Soil and Environment*</i>	63	<i>Plant, Soil and Environment*</i>	33
<i>Ekológia Bratislava</i>	53	<i>Ekológia Bratislava</i>	26
<i>Animal Genetics</i>	20	<i>Journal of Forest Science</i>	15
<i>Živočišná Výroba</i>	19	<i>Journal of Separation Science</i>	5

*for explanation see Table 2

Table 4. Slovak University of Agriculture in Nitra

Web of Science		SCOPUS	
Title	number of citations	Title	number of citations
<i>Czech Journal of Animal Science</i>	17	<i>Czech Journal of Animal Science</i>	22
<i>Plant, Soil and Environment*</i>	17	<i>Plant, Soil and Environment*</i>	22
<i>Biologia</i>	9	<i>Journal of Environmental Science and Health – Part A Toxic/Hazardous Substances and Environmental Engineering</i>	8
<i>Journal of Environmental Science and Health – Part A Toxic/Hazardous Substances and Environmental Engineering</i>	8	<i>Journal of Animal and Feed Sciences</i>	5
<i>Acta Veterinaria Brno</i>	4	<i>International Agrophysics</i>	4

*for explanation see Table 2

Despite the given time span the numbers of articles for each university published in individual journals vary in WOS and SCOPUS. For example, at the time of this research (January 2006), the whole issue 10 (October 2005), volume 50 of *Czech Journal of Animal Science* was missing in SCOPUS. This may indicate that SCOPUS is slower in updating its database. On the other hand, articles from issues 3 and 4, volume 45 of *Rostlinná výroba* were missing in WOS. The reason could be the system of excerption of the databases, but at this time this presupposition cannot be taken for granted. Such serious omissions could occur coincidentally; they however show that neither of citation databases is entirely complete.

Core journals for the region of Central Europe

According to this research following journals belong among the most important titles in the region of Central Europe:

On average 30% of all articles published by the researched universities (this percentage varies from 26% to 44%) appeared in *Plant, Soil, and Environment* (and its predecessor *Rostlinná výroba*), and in *Czech Journal of Animal Science*.

Second ranked the journals *Food Chemistry*, *Ekológia Bratislava* and *Journal of Forestry Science*.

These five journals represent approximately 40–45% of all articles published on agricultural

Table 5. Czech University of Agriculture in Prague

Web of Science		SCOPUS	
Title	number of citations	Title	number of citations
<i>Plant, Soil and Environment*</i>	141	<i>Plant, Soil and Environment*</i>	232
<i>Czech Journal of Animal Science</i>	43	<i>Czech Journal of Animal Science</i>	102
<i>Zeitschrift für Pflanzenkrankheiten und Pflanzenschutz – Journal of Plant Diseases and Protection</i>	12	<i>Journal of Forest Science</i>	61
<i>Živočišná Výroba</i>	12	<i>Ekológia Bratislava</i>	33
<i>Chemické Listy</i>	9	<i>Veterinární Medicína</i>	26

*for explanation see Table 2; CUA – Web of Science (409); CUA – SCOPUS (848)

universities in the Czech and the Slovak Republic. The rest 55–60% of articles are released in several hundred journals with average number of 1–5 articles per one journal.

Coverage of minor subject fields

In general, SCOPUS has a better coverage of minor subject and research fields than WOS.

SCOPUS covers more journals (the difference is approximately 4900 titles) and focuses more on European titles. WOS on the other hand has an excellent coverage of scientific titles from the United States and Asia.

According to our research, the two examined citation databases can be considered as more or less equal sources of information. Both WOS and SCOPUS omit some articles and therefore the best solution for evaluation and research purposes is probably their combination.

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