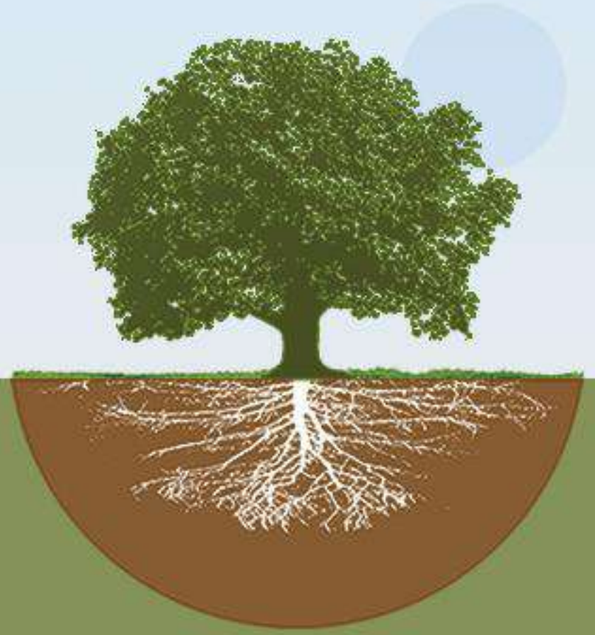
Publishing Scientific Papers

J.E. (Enrique) Fernández



Terra vita est

IRNAS

Instituto de Recursos Naturales y Agrobiología de Sevilla

Publishing scientific papers

1. Choosing the journal
2. Ethics in publishing
3. Checking the manuscript
4. What do you have to know prior to submission?
5. The Editor's decision

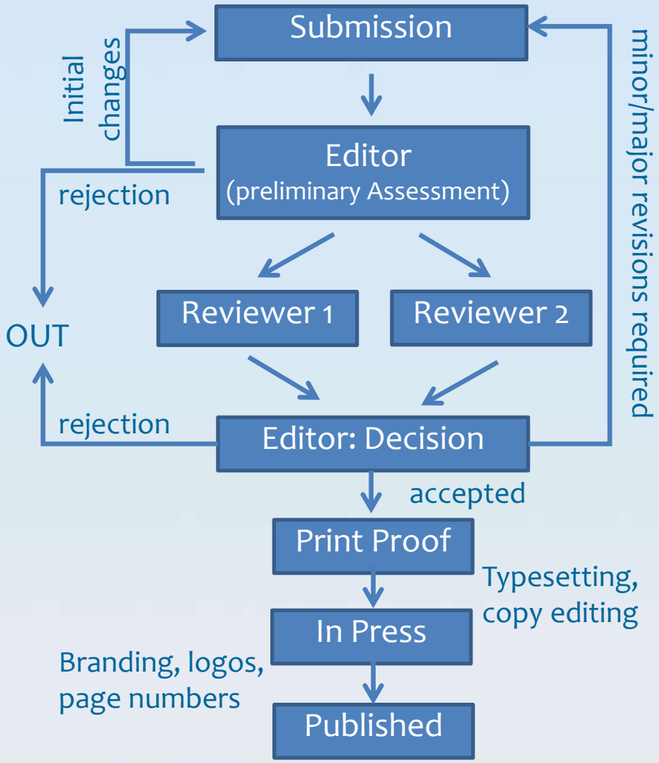
Principles of Peer Review

Helps to determine the quality, validity, significance and originality of research

Helps to improve the quality of papers

Publishers stand outside the academic process and are not prone to prejudice or favour

Publishers facilitate the review process by investing in online review systems and providing tools to help Editors and Reviewers

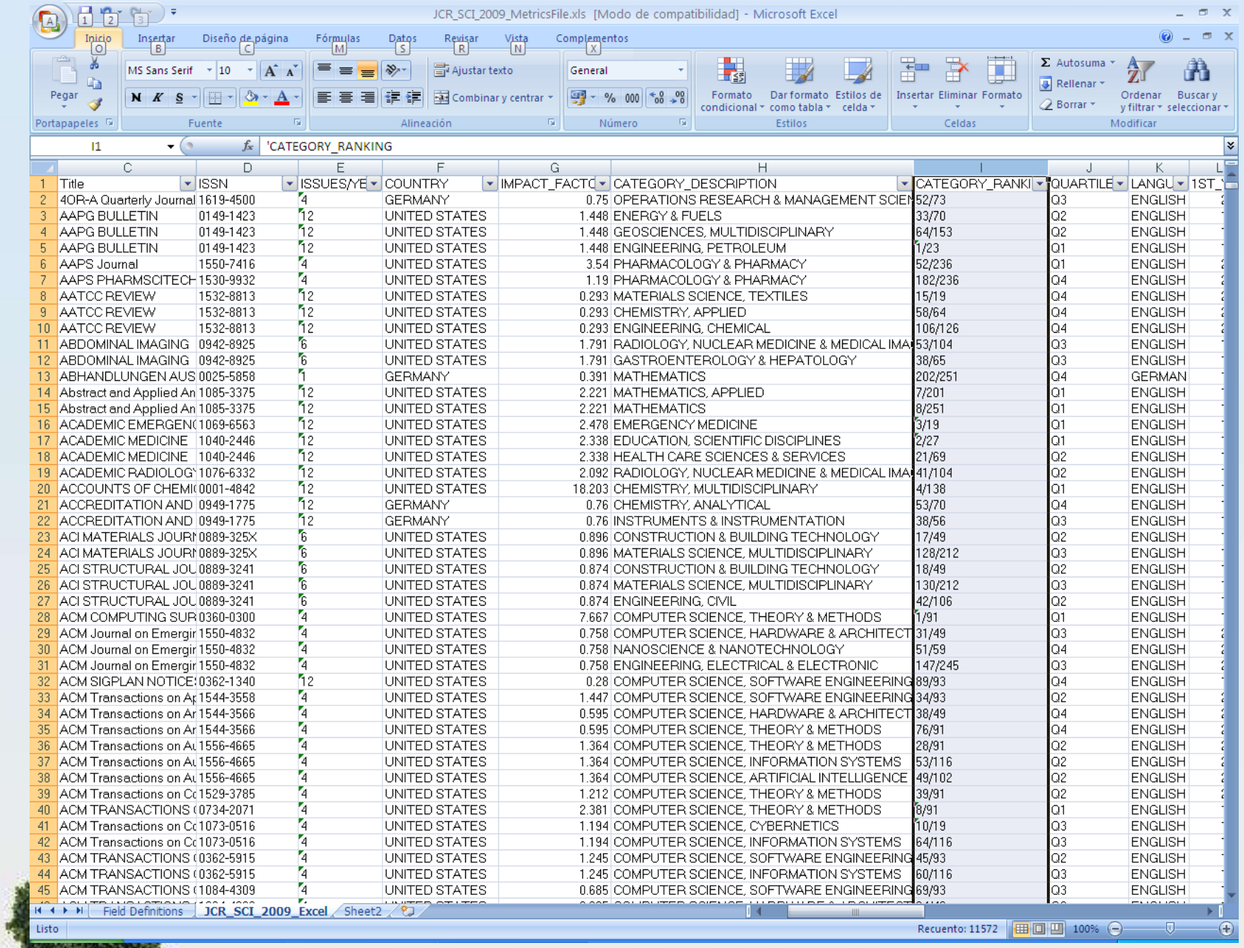


Do you accept invitations to review a paper?

Do you think that the review process is a disgrace?

Choosing the Journal

- Take into account the *Scope*, quality indexes, time of publication…



Title	ISSN	ISSUES/YE	COUNTRY	IMPACT_FACTO	CATEGORY_DESCRIPTION	CATEGORY_RANKI	QUARTILE	LANGU
4OR-A Quarterly Journal	1619-4500	4	GERMANY	0.75	OPERATIONS RESEARCH & MANAGEMENT SCIEN	52/73	Q3	ENGLISH
AAPG BULLETIN	0149-1423	12	UNITED STATES	1.448	ENERGY & FUELS	33/70	Q2	ENGLISH
AAPG BULLETIN	0149-1423	12	UNITED STATES	1.448	GEOSCIENCES, MULTIDISCIPLINARY	64/153	Q2	ENGLISH
AAPG BULLETIN	0149-1423	12	UNITED STATES	1.448	ENGINEERING, PETROLEUM	1/23	Q1	ENGLISH
AAPS Journal	1550-7416	4	UNITED STATES	3.54	PHARMACOLOGY & PHARMACY	52/236	Q1	ENGLISH
AAPS PHARMSCITECH	1530-9932	4	UNITED STATES	1.19	PHARMACOLOGY & PHARMACY	182/236	Q4	ENGLISH
AATCC REVIEW	1532-8813	12	UNITED STATES	0.293	MATERIALS SCIENCE, TEXTILES	15/19	Q4	ENGLISH
AATCC REVIEW	1532-8813	12	UNITED STATES	0.293	CHEMISTRY, APPLIED	58/64	Q4	ENGLISH
AATCC REVIEW	1532-8813	12	UNITED STATES	0.293	ENGINEERING, CHEMICAL	106/126	Q4	ENGLISH
ABDOMINAL IMAGING	0942-8925	6	UNITED STATES	1.791	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMA	53/104	Q3	ENGLISH
ABDOMINAL IMAGING	0942-8925	6	UNITED STATES	1.791	GASTROENTEROLOGY & HEPATOLOGY	38/65	Q3	ENGLISH
ABHANDLUNGEN AUS	0025-5858	1	GERMANY	0.391	MATHEMATICS	202/251	Q4	GERMAN
Abstract and Applied An	1085-3375	12	UNITED STATES	2.221	MATHEMATICS, APPLIED	7/201	Q1	ENGLISH
Abstract and Applied An	1085-3375	12	UNITED STATES	2.221	MATHEMATICS	8/251	Q1	ENGLISH
ACADEMIC EMERGEN	1069-6563	12	UNITED STATES	2.478	EMERGENCY MEDICINE	3/19	Q1	ENGLISH
ACADEMIC MEDICINE	1040-2446	12	UNITED STATES	2.338	EDUCATION, SCIENTIFIC DISCIPLINES	2/27	Q1	ENGLISH
ACADEMIC MEDICINE	1040-2446	12	UNITED STATES	2.338	HEALTH CARE SCIENCES & SERVICES	21/69	Q2	ENGLISH
ACADEMIC RADIOLOG	1076-6332	12	UNITED STATES	2.092	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMA	41/104	Q2	ENGLISH
ACCOUNTS OF CHEMI	0001-4842	12	UNITED STATES	18.203	CHEMISTRY, MULTIDISCIPLINARY	4/138	Q1	ENGLISH
ACCREDITATION AND	0949-1775	12	GERMANY	0.76	CHEMISTRY, ANALYTICAL	53/70	Q4	ENGLISH
ACCREDITATION AND	0949-1775	12	GERMANY	0.76	INSTRUMENTS & INSTRUMENTATION	38/56	Q3	ENGLISH
ACI MATERIALS JOUR	0889-325X	6	UNITED STATES	0.896	CONSTRUCTION & BUILDING TECHNOLOGY	17/49	Q2	ENGLISH
ACI MATERIALS JOUR	0889-325X	6	UNITED STATES	0.896	MATERIALS SCIENCE, MULTIDISCIPLINARY	128/212	Q3	ENGLISH
ACI STRUCTURAL JOU	0889-3241	6	UNITED STATES	0.874	CONSTRUCTION & BUILDING TECHNOLOGY	18/49	Q2	ENGLISH
ACI STRUCTURAL JOU	0889-3241	6	UNITED STATES	0.874	MATERIALS SCIENCE, MULTIDISCIPLINARY	130/212	Q3	ENGLISH
ACI STRUCTURAL JOU	0889-3241	6	UNITED STATES	0.874	ENGINEERING, CIVIL	42/106	Q2	ENGLISH
ACM COMPUTING SUR	0360-0300	4	UNITED STATES	7.667	COMPUTER SCIENCE, THEORY & METHODS	1/91	Q1	ENGLISH
ACM Journal on Emergir	1550-4832	4	UNITED STATES	0.758	COMPUTER SCIENCE, HARDWARE & ARCHITECT	31/49	Q3	ENGLISH
ACM Journal on Emergir	1550-4832	4	UNITED STATES	0.758	NANOSCIENCE & NANOTECHNOLOGY	51/59	Q4	ENGLISH
ACM Journal on Emergir	1550-4832	4	UNITED STATES	0.758	ENGINEERING, ELECTRICAL & ELECTRONIC	147/245	Q3	ENGLISH
ACM SIGPLAN NOTICE	0362-1340	12	UNITED STATES	0.28	COMPUTER SCIENCE, SOFTWARE ENGINEERING	89/93	Q4	ENGLISH
ACM Transactions on Ap	1544-3558	4	UNITED STATES	1.447	COMPUTER SCIENCE, SOFTWARE ENGINEERING	34/93	Q2	ENGLISH
ACM Transactions on Ar	1544-3566	4	UNITED STATES	0.595	COMPUTER SCIENCE, HARDWARE & ARCHITECT	38/49	Q4	ENGLISH
ACM Transactions on Ar	1544-3566	4	UNITED STATES	0.595	COMPUTER SCIENCE, THEORY & METHODS	76/91	Q4	ENGLISH
ACM Transactions on Au	1556-4665	4	UNITED STATES	1.364	COMPUTER SCIENCE, THEORY & METHODS	28/91	Q2	ENGLISH
ACM Transactions on Au	1556-4665	4	UNITED STATES	1.364	COMPUTER SCIENCE, INFORMATION SYSTEMS	53/116	Q2	ENGLISH
ACM Transactions on Au	1556-4665	4	UNITED STATES	1.364	COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE	49/102	Q2	ENGLISH
ACM Transactions on Cc	1529-3785	4	UNITED STATES	1.212	COMPUTER SCIENCE, THEORY & METHODS	39/91	Q2	ENGLISH
ACM TRANSACTIONS	0734-2071	4	UNITED STATES	2.381	COMPUTER SCIENCE, THEORY & METHODS	8/91	Q1	ENGLISH
ACM Transactions on Cc	1073-0516	4	UNITED STATES	1.194	COMPUTER SCIENCE, CYBERNETICS	10/19	Q3	ENGLISH
ACM Transactions on Cc	1073-0516	4	UNITED STATES	1.194	COMPUTER SCIENCE, INFORMATION SYSTEMS	64/116	Q3	ENGLISH
ACM TRANSACTIONS	0362-5915	4	UNITED STATES	1.245	COMPUTER SCIENCE, SOFTWARE ENGINEERING	45/93	Q2	ENGLISH
ACM TRANSACTIONS	0362-5915	4	UNITED STATES	1.245	COMPUTER SCIENCE, INFORMATION SYSTEMS	60/116	Q3	ENGLISH
ACM TRANSACTIONS	1084-4309	4	UNITED STATES	0.685	COMPUTER SCIENCE, SOFTWARE ENGINEERING	69/93	Q3	ENGLISH

The quality indexes are in the *Journal Citation Reports*:

- The Impact Factor is important

- The position of the journal in the rank is more important

There are prestigious Q2 journals

Choosing the Journal

- Choose the journal early, before the writing begins.
  It will save you time for choosing the focus and adapting the format.

- Consequences of a bad choice:

  - Your paper can be rejected because it does not fall within the Scope of the journal.

  - Your paper receives poor or unfair review because the reviewers are not familiar with your area.

  - Your paper is published but not cited, because the topic is not of interest to the readers of the journal.

- In which journals are key papers related to your work being published?
  They will likely be good options for submitting your paper

Subscription or Open Access journal?

- Subscription journals: if the journal belongs to a good editorial group, the quality of the review process is guaranteed

- Open Access journals: they can reach a wider audience, and some Institutions (e.g. the EU) ask for it.

BUT be aware of predatory journals

Predatory publishers are corrupting open access (Nature, 2012)
Doi: 179. 10.1038/489179a

What is a predatory journal? A scoping review
Doi: 10.12688/f1000research.15256.2

Predatory journals

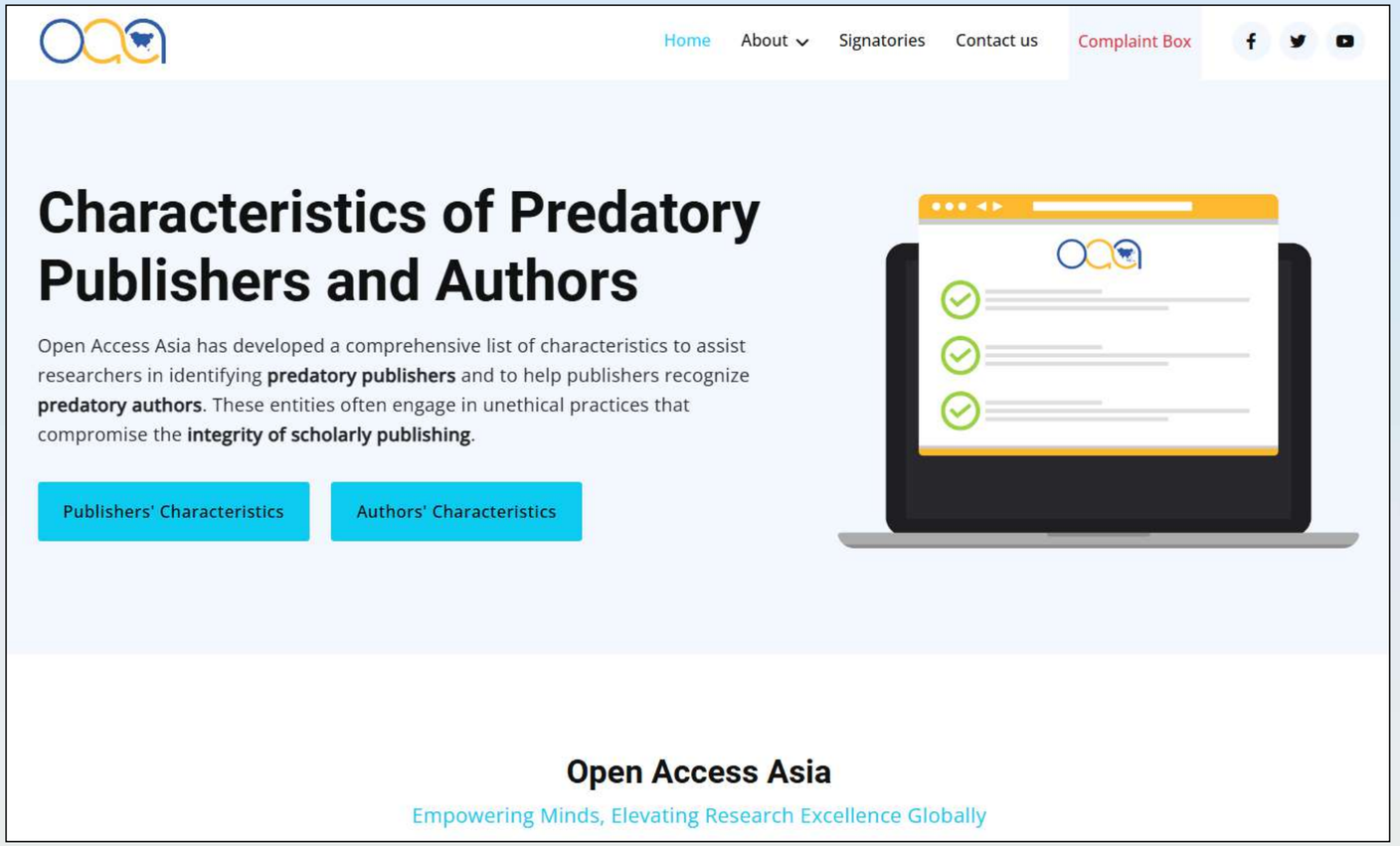
Complaints that are associated with predatory journals include, but are not limited to:

- Accepting articles quickly with little or no peer review or quality control, including mediocre and fake papers.
- Interfere with the editorial process to ensure acceptance of low-quality articles.
- Notifying academics of article fees only after papers are accepted.
- Aggressively campaigning for academics to submit articles or serve on editorial boards.
- Listing academics as members of editorial boards without their permission.
- Appointing fake academics to editorial boards.
- Allow editors to publish repeatedly in the journals they command.
- Mimicking the name or web site style of more established journals.
- Making misleading claims about the publishing operation, such as a false location.
- Citing fake or non-existent impact factors.
- Boasting about being "indexed" by academic social networking sites (like ResearchGate) and standard identifiers (like ISSNs and DOIs) as if they were prestigious or reputable bibliographic databases.

SOURCE: https://predatoryjournals.org/

Predatory journals

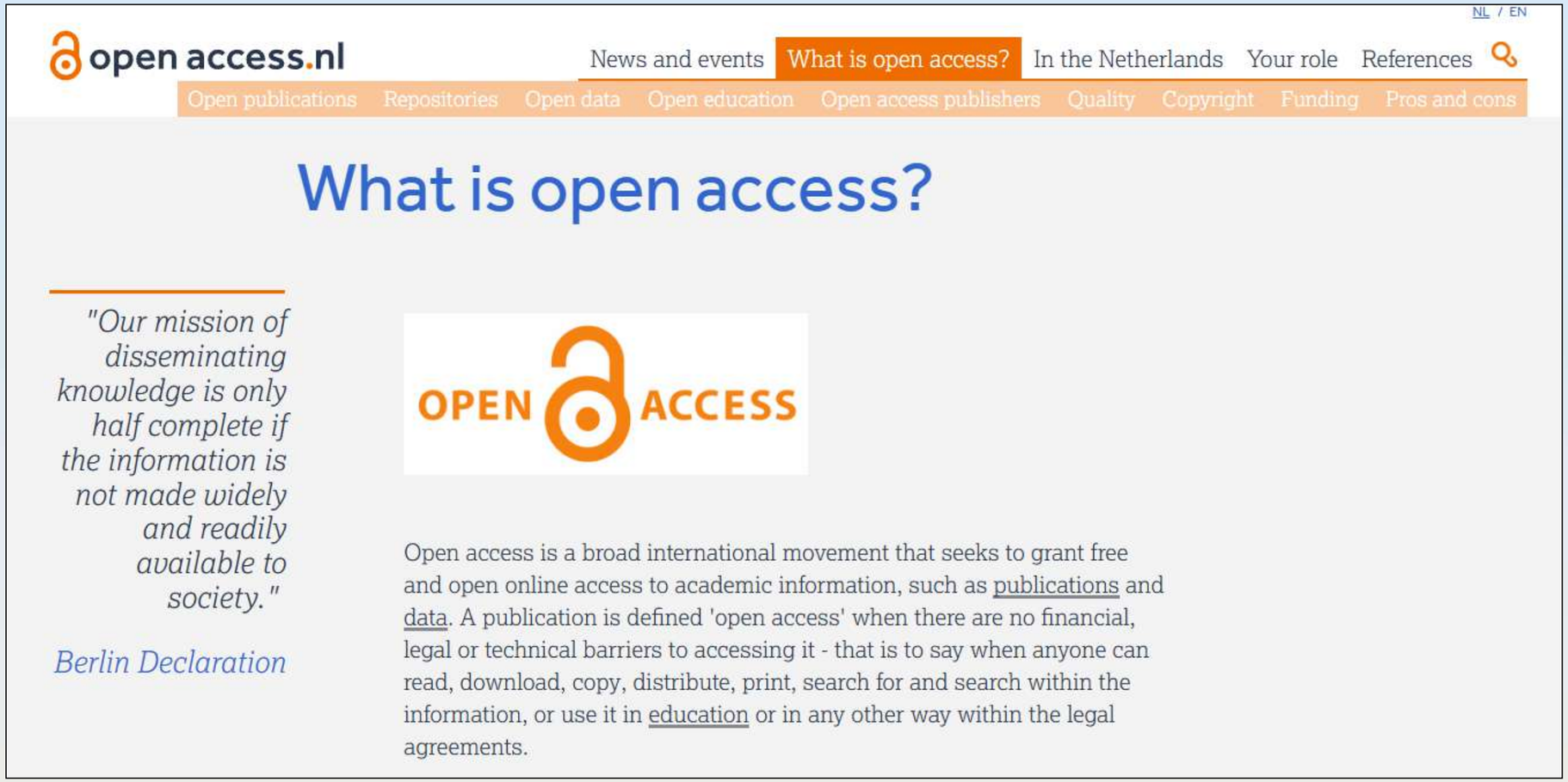
https://openaccessasia.org/



SOURCE: https://predatoryjournals.org/

Open Access

https://www.openaccess.nl/



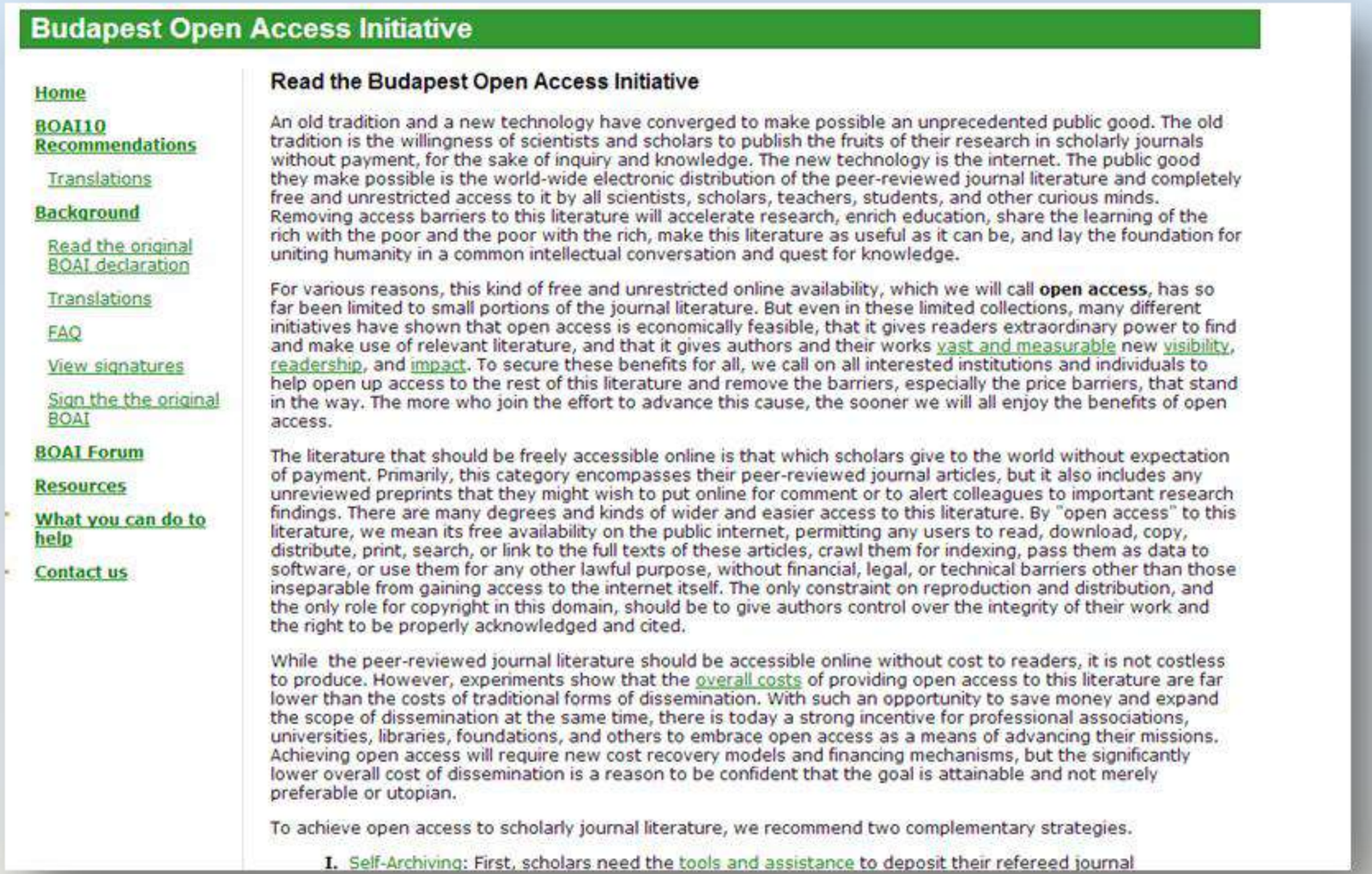
Open Access

The term was first devised back in 2001 when the Open Society Institute (OSI) called a meeting in Budapest of leading proponents of open access. They established what is known as the Budapest Open Access Initiative so called BOAI. These were the first people to really define what they meant as open access.

Which was:

- free availability on the public internet
- permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself.

Open Access



Budapest Open Access Initiative

- Home
- BOAI10 Recommendations
  - Translations
- Background
  - Read the original BOAI declaration
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  - Sign the the original BOAI
- BOAI Forum
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- What you can do to help
- Contact us

Read the Budapest Open Access Initiative

An old tradition and a new technology have converged to make possible an unprecedented public good. The old tradition is the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment, for the sake of inquiry and knowledge. The new technology is the internet. The public good they make possible is the world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds. Removing access barriers to this literature will accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it can be, and lay the foundation for uniting humanity in a common intellectual conversation and quest for knowledge.

For various reasons, this kind of free and unrestricted online availability, which we will call **open access**, has so far been limited to small portions of the journal literature. But even in these limited collections, many different initiatives have shown that open access is economically feasible, that it gives readers extraordinary power to find and make use of relevant literature, and that it gives authors and their works vast and measurable new visibility, readership, and impact. To secure these benefits for all, we call on all interested institutions and individuals to help open up access to the rest of this literature and remove the barriers, especially the price barriers, that stand in the way. The more who join the effort to advance this cause, the sooner we will all enjoy the benefits of open access.

The literature that should be freely accessible online is that which scholars give to the world without expectation of payment. Primarily, this category encompasses their peer-reviewed journal articles, but it also includes any unreviewed preprints that they might wish to put online for comment or to alert colleagues to important research findings. There are many degrees and kinds of wider and easier access to this literature. By "open access" to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

While the peer-reviewed journal literature should be accessible online without cost to readers, it is not costless to produce. However, experiments show that the overall costs of providing open access to this literature are far lower than the costs of traditional forms of dissemination. With such an opportunity to save money and expand the scope of dissemination at the same time, there is today a strong incentive for professional associations, universities, libraries, foundations, and others to embrace open access as a means of advancing their missions. Achieving open access will require new cost recovery models and financing mechanisms, but the significantly lower overall cost of dissemination is a reason to be confident that the goal is attainable and not merely preferable or utopian.

To achieve open access to scholarly journal literature, we recommend two complementary strategies.

I. Self-Archiving: First, scholars need the tools and assistance to deposit their refereed journal

Open Access

•The golden route:

1) **Full Open Access journals**: publication via publisher platforms, in full open access journals. This route may involve a charge. The publication costs, known as 'article processing charges' (APCs), are covered by authors or by their institutions.

2) **Hybrid Journals:** publication via 'hybrid' journals. These journals are subscription journals that allow open access publication of individual articles on payment of an APC.

•The green route: the full text of academic publications is deposited in a trusted repository, a publicly accessible database managed by a research organisation.

•The diamond route: publication via diamond journals/platforms that do not charge APCs. Diamond open access journals are usually funded via library subsidy models, institutions or societies.

Publishing scientific papers

1. Choosing the journal
2. Ethics in publishing
3. Checking the manuscript
4. What do you have to know prior to submission?
5. The Editor's decision

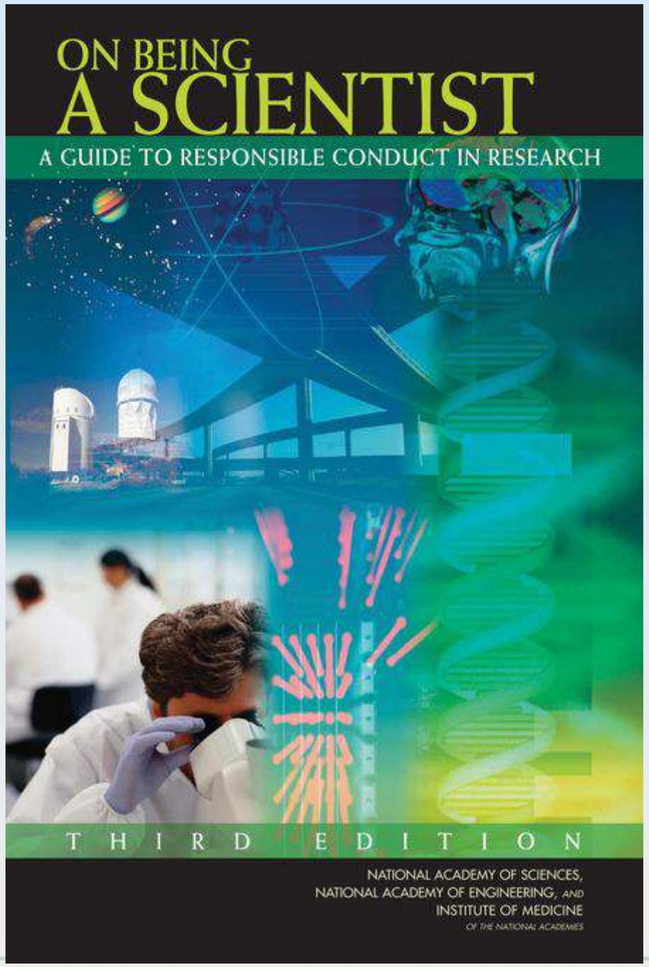
Ethics in publishing

After 20 years of work everybody will know you: which opinion will the others have of you?

- Authorship of the paper
- Plagiarism
- False data
- Dividing the work for publishing more than one paper ('salami slicing' / 'cucumber slicing')
- Hiding evidence against your findings
- Not citing previous publications

http://www.ethics.elsevier.com

http://publicationethics.org/files

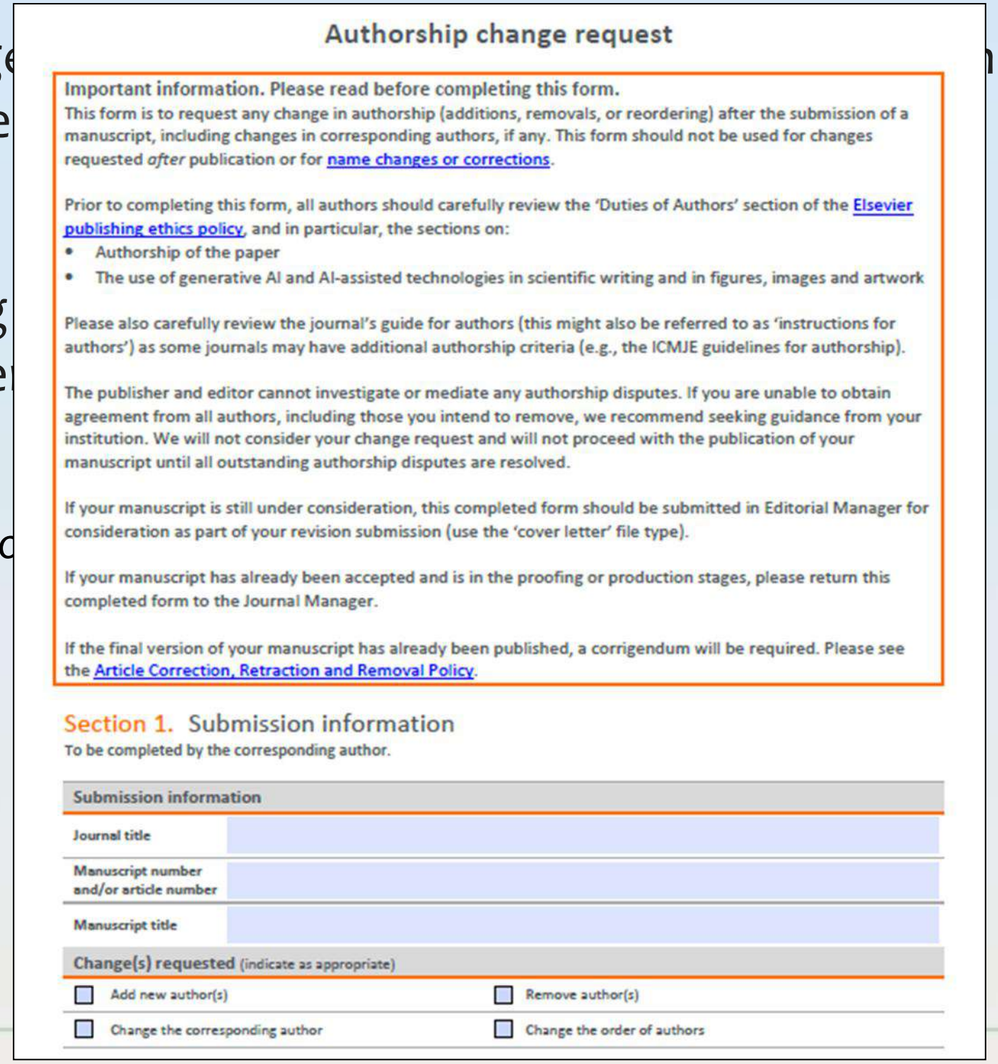


Changes to authorship

"The editors of this journal generally will not consider change
submitted. It is important that authors carefully consider the
provide a definitive author list at original submission.

• All requests to change authorship must be submitted using
with the instructions outlined in the form will not be conside

Guide for Autho



Authorship change request

Important information. Please read before completing this form.
This form is to request any change in authorship (additions, removals, or reordering) after the submission of a manuscript, including changes in corresponding authors, if any. This form should not be used for changes requested *after* publication or for name changes or corrections.

Prior to completing this form, all authors should carefully review the 'Duties of Authors' section of the Elsevier publishing ethics policy, and in particular, the sections on:

- Authorship of the paper
- The use of generative AI and AI-assisted technologies in scientific writing and in figures, images and artwork

Please also carefully review the journal's guide for authors (this might also be referred to as 'instructions for authors') as some journals may have additional authorship criteria (e.g., the ICMJE guidelines for authorship).

The publisher and editor cannot investigate or mediate any authorship disputes. If you are unable to obtain agreement from all authors, including those you intend to remove, we recommend seeking guidance from your institution. We will not consider your change request and will not proceed with the publication of your manuscript until all outstanding authorship disputes are resolved.

If your manuscript is still under consideration, this completed form should be submitted in Editorial Manager for consideration as part of your revision submission (use the 'cover letter' file type).

If your manuscript has already been accepted and is in the proofing or production stages, please return this completed form to the Journal Manager.

If the final version of your manuscript has already been published, a corrigendum will be required. Please see the Article Correction, Retraction and Removal Policy.

Section 1. Submission information

To be completed by the corresponding author.

Submission information	
Journal title	
Manuscript number and/or article number	
Manuscript title	

Change(s) requested (indicate as appropriate)

☐ Add new author(s)	☐ Remove author(s)
☐ Change the corresponding author	☐ Change the order of authors

Changes to authorship

• Only in exceptional circumstances will the journal editor consider the addition, deletion or rearrangement of authors post acceptance.

• Publication of the manuscript may be paused while a change in authorship request is being considered.

• Any authorship change requests approved by the journal editor will result in a corrigendum if the manuscript has already been published.

• Any unauthorised authorship changes may result in the rejection of the article, or retraction, if the article has already been published.

Guide for Authors, Agricultural Water Management (Elsevier).

Ethics in publishing

After 20 years of work everybody will know you: which opinion will the others have of you?

A standard researcher has room in the scientific community: if his/her work increases the current knowledge, even if little, it is worthy to be taken into account.

A researcher who does not consider the ethics in publishing, i.e. who makes any type of fraud, it does not have room in the scientific community.

⟶ Scientific literature MUST be reliable

Fraud is not anecdotic: each level of fraud is relatively high and editorials spend a lot of effort to avoid it.

Do not cheat. It can be very costly to you: Article withdrawal / retraction / removal
Retraction lists

Salami Slicing

FACTSHEET: Salami Slicing

The 'slicing' of research that would form one meaningful paper into several different papers is called 'salami publication' or 'salami slicing'.[1]

Unlike duplicate publication, which involves reporting the exact same data in two or more publications, salami slicing involves breaking up or segmenting a large study into two or more publications. These segments are referred to as 'slices' of a study.[2]

As a general rule, as long as the 'slices' of a broken up study share the same hypotheses, population, and methods, this is not acceptable practice. The same 'slice' should never be published more than once.[3]

The reason: according to the U.S. Office of Research Integrity, salami slicing can result in a distortion of the literature by leading unsuspecting readers to believe that data presented in each salami slice (i.e., journal article) is derived from a different subject sample.[2] This not only skews the 'scientific database' but it creates repetition that wastes readers' time as well as the time of editors and reviewers, who must handle each paper separately. Further, it unfairly inflates the author's citation record.

There are instances where data from large clinical trials and epidemiological studies cannot be published simultaneously, or are such that they address different and distinct questions with multiple and unrelated endpoints. In these cases, it is legitimate to describe important outcomes of the studies separately.[1,4,5] However each paper should clearly define its hypothesis and be presented as one section of a much larger study.[3]

Most journals request that authors who either know or suspect a manuscript submitted for publication represents fragmented data should disclose this information, as well as enclose any other papers (published or unpublished) that might be part of the paper under consideration.[2,5]

Guide to Salami Slicing and How to Prevent It*

Action	What is it?	Is it unethical?	What should you do?
Breaking up or segmenting data from a single study and creating different manuscripts for publication	Publishing small 'slices' of research in several different papers is called 'salami publication' or 'salami slicing'.	**Yes.** Salami slicing can result in a distortion of the literature by leading unsuspecting readers to believe that data presented in each 'slice' is derived from a different subject sample.[2]	Avoid inappropriately breaking up data from a single study into two or more papers. When submitting a paper, be transparent. Send copies of any manuscripts closely related to the manuscript under consideration. This includes any manuscripts published, recently submitted, or already accepted.[3]

*When in doubt, always consult with your professor, advisor, or someone in a position of authority who can guide you to the right course of action.

References

1. Abraham P (2000). Duplicate and salami publications. Journal of Postgraduate Medicine, 46: 67.
2. Office of Research Integrity. Salami Slicing (i.e., data fragmentation). Available at: ori.hhs.gov/plagiarism-16. Accessed on February 14, 2019.
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March 2019

Salami Slicing

Ecological risk assessment of Zinc metal in different varieties of wheat irrigated with wastewater regimes: Assessing the public health risk

Fu Chen[1,2], Jing Ma [1,2], Asma Zafar[3], Kafeel Ahmad[3], Zafar Iqbal Khan[3], Muhammad Arslan Ashraf[4*], Mona S Alwahibi[5], Mohamed S Elshikh[5]

Highlights:

- Environmental heavy metal toxicity
- Mobility indices
- Public health risks
- Zinc Soil Pollution
- Heavy Metal Ions
- Food chain contamination

Ecological risk assessment of heavy metals in different wheat varieties irrigated with various wastewater: The particular case of different districts in Pakistan

Fu Chen[1,2], Jing Ma [1,2], Asma Zafar[3], Kafeel Ahmad[3], Zafar Iqbal Khan[3], Muhammad Arslan Ashraf[4*], Mona S Alwahibi[5], Mohamed S Elshikh[5]

Highlights:

- Environmental heavy metal toxicity
- Metal bioaccumulation
- Public health risks
- Nickel Soil Pollution
- Food chain contamination

Salami Slicing

2. Material and Methods

Study area

Seven districts (Faisalabad, Chiniot, Kasur, Sargodha, Gujranwala, Bhakkar and Gujrat) of Punjab Pakistan were selected for research. Wheat grains, shoots, roots, water, and soil being sampled from sewage, ground, and industrialized water applied field's wheat of various kinds in each district. All the composite samples from selected districts were combined into one composite/replicate, and four samples were replicated. These four samples, one from each type

2. Material and Methods

Research area

In seven areas of Punjab, experimental work was conducted (Kasur, Gujrat, Chiniot, Sargodha, Faisalabad, Gujranwala and Bhakkar). Wheat grains, shoots, roots, water, and soil were sampled from manure, ground and residential water for the growth of fields of wheat in fields of various kinds in each district. All of the combined samples from the seven zones were united in one copy, 4 specimens were arranged. This composite sample was made up of 4

Salami Slicing

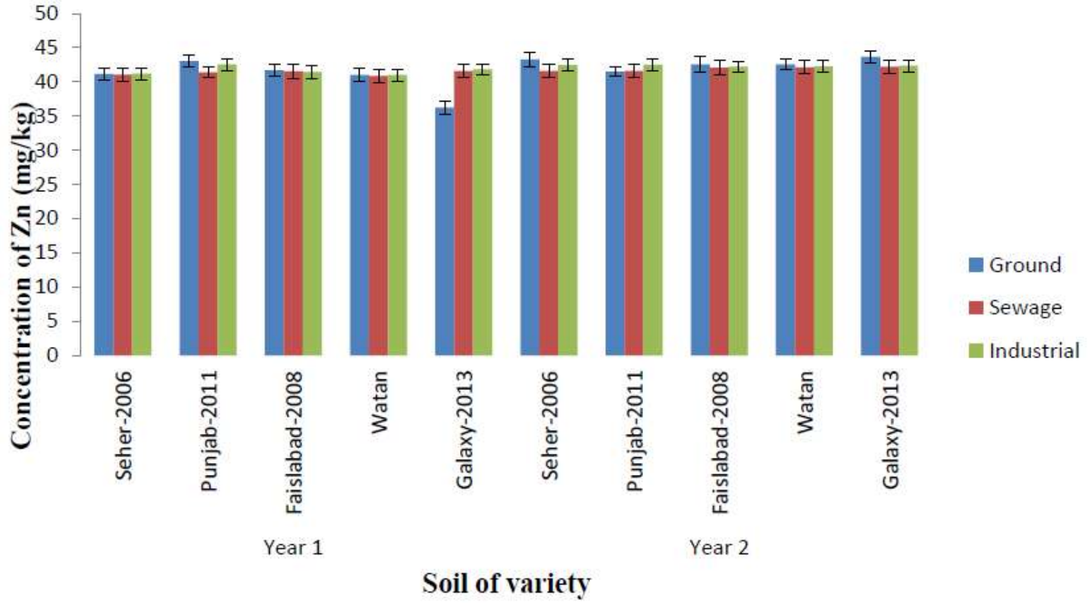


Fig. 2. Zinc concentration in soil applied via diverse wheat varieties with three resources of water

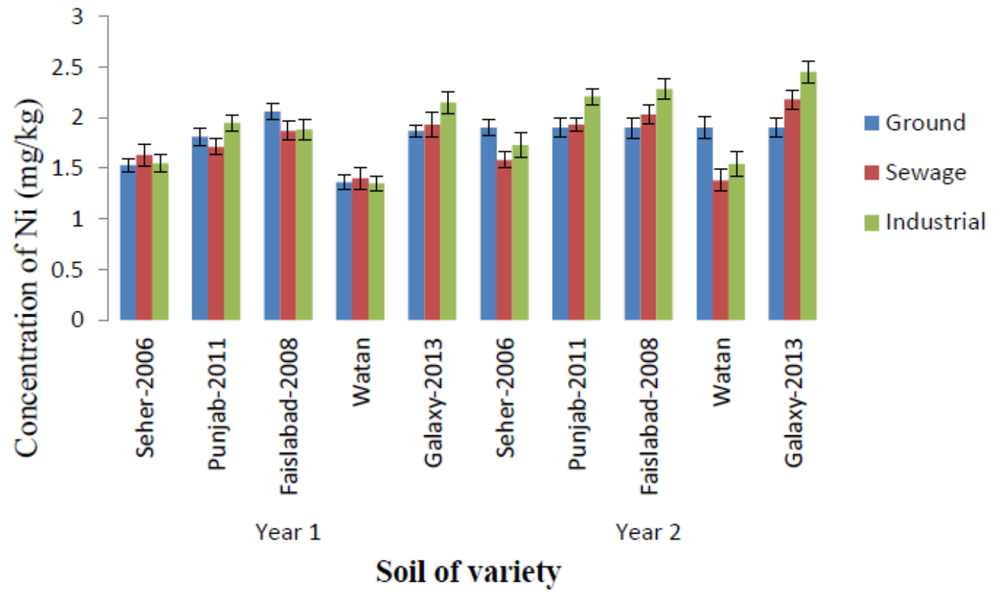


Figure 2. Concentration of Nickel for soil flourish with wheat varieties for three water sources during two seasons

Ethics in publishing

Paper mills are sophisticated, professional companies that offer publishing services to authors

Paper mill characteristics:

Offer an **efficient, end-to-end service to authors** to **craft manuscripts which deliberately deceive journals**:

- Charge authors depending on the **service purchased by the author** and the journal where the paper is published
- Handle **all communications with the journal, via non-institutional email addresses,** which allow the paper mill to impersonate the corresponding author
- **Vary their approach to ensure success**, including placing **single papers** in journals, or infiltrating journals through **special issues** or conference proceedings where a group of **Guest Editors can control the content** completely and accept multiple papers

Source: ***Publishing Ethics Update: Essential Editor Checks & Best Practices (Elsevier)***

Paper mill manuscripts encompass:

- Papers describing **research that never happened**
- Papers describing real research but with **sold authorship**
- Papers describing either fake or real research but with **fake Guest Editors, fake reviewers** and **fake reviews**
- **Any combination** of the above

Paper mills are designed to deceive:

- They are **difficult to detect** from the submission of a **single** manuscript and are often only **detected only after a pattern of behavior** becomes apparent across a **significant number of manuscript submissions**.
- Once they have a paper accepted by a journal, they **follow-up with more submissions** until the journal realizes the issue.

Duplicate and Simultaneous Submissions

ELSEVIER

Recipients: [jefer@irnase.csic.es (AGWAT), distr.ed.geoderma@gmail.com (GEODER)]

Dear Editors,

We've identified similarities in manuscripts recently submitted to your journals. You can find more information about this submission by using the **Evaluate Manuscript** feature in Editorial Manager.

Please note: the manuscript status below reflects the status at the time this email was sent. This may differ from the current status in Editorial Manager due to actions already taken by an Editor. Nonetheless, we believe it is important to bring this issue to your attention.

Journal Name: Agricultural Water Management

Manuscript ID: AGWAT-D-25-00485
Detection date: 28 February 2025
Manuscript status: With Editor

Manuscript title: Impact of wastewater irrigation practices on soil health: A comparative study of two irrigation techniques
Corresponding author name: salar rezapour

Abstract:
The use of wastewater for crop irrigation has garnered significant global attention in regions facing water shortages, presenting a viable approach to alleviate water scarcity challenges. However, wastewater reuse may potentially have negative impacts on soil health. Our study was designed to comparatively assess soil health indicators in the smallholder farmlands that have been irrigated by untreated (UTW) and treated (TW) wastewater. The Soil Health Index (SHI) was established through the application of both linear (SHI - L) and nonlinear (SHI - NL) models, using the Total Data Set (TDS) and the Minimum Data Set (MDS). A significant change was found in the majority of soil indicators in the farms irrigated with UTW compared to those irrigated with TW, particularly in the heavy metals concentration. The average concentrations of Zn, Cu, Cd, Pb, and Ni exhibited remarkable differences between the soils irrigated with UTW and those irrigated with TW, ranging from 54.5% to 91.6%, 8.6% to 45.6%, 35.7% to 73.8%, 7.2% to 40.2%, and 10% to 12%, respectively. The most important of soil health indicators identified through the MDS that reflected the highest contributions to the SHIs were SOM, available P, and Cd in both regions utilizing UTW and TW irrigation. Compared to the UTW-irrigated soils, the mean values of L- SHI and NL- SHI were 5.6 to 25.3% and 2.2 to 20.6% higher in the TW-irrigated soils, respectively, across all farms, implying a considerable improvement in the soil's health capacity and functionality following the implementation of TW irrigation. Corn productivity accounts for approximately 44 to 47% and 50 to 52% of the variance recorded in the calculated L- SHI and NL- SHI of the UTW and TW irrigation methods, respectively, which is well-supported the considerable influence of SHIs on crop performance. Overall, our findings illustrate the potential of utilizing SHI assessments, particularly NL -SHI, as practical and sensitive tools for the quantitative evaluation of soil health in the croplands impacted by wastewater irrigation.

Journal Name: Geoderma

Manuscript ID: GEODER-D-25-00506
Detection date: 28 February 2025
Manuscript status: With Editor

Manuscript title: Impact of wastewater irrigation practices on soil health: A comparative study of two irrigation techniques
Corresponding author name: Salar Rezapour

Abstract:
The use of wastewater for crop irrigation has garnered significant global attention in regions facing water shortages, presenting a viable approach to alleviate water scarcity challenges. However, wastewater reuse may potentially have negative impacts on soil health. Our study was designed to comparatively assess soil health indicators in the smallholder farmlands that have been irrigated by untreated (UTW) and treated (TW) wastewater. The Soil Health Index (SHI) was established through the application of both linear (SHI - L) and nonlinear (SHI - NL) models, using the Total Data Set (TDS) and the Minimum Data Set (MDS). A significant change was found in the majority of soil indicators in the farms irrigated with UTW compared to those irrigated with TW, particularly in the heavy metals concentration. The average concentrations of Zn, Cu, Cd, Pb, and Ni exhibited remarkable differences between the soils irrigated with UTW and those irrigated with TW, ranging from 54.5% to 91.6%, 8.6% to 45.6%, 35.7% to 73.8%, 7.2% to 40.2%, and 10% to 12%, respectively. The most important of soil health indicators identified through the MDS that reflected the highest contributions to the SHIs were SOM, available P, and Cd in both regions utilizing UTW and TW irrigation. Compared to the UTW-irrigated soils, the mean values of L- SHI and NL- SHI were 5.6 to 25.3% and 2.2 to 20.6% higher in the TW-irrigated soils, respectively, across all farms, implying a considerable improvement in the soil's health capacity and functionality following the implementation of TW irrigation. Corn productivity accounts for approximately 44 to 47% and 50 to 52% of the variance recorded in the calculated L- SHI and NL- SHI of the UTW and TW irrigation methods, respectively, which is well-supported the considerable influence of SHIs on crop performance. Overall, our findings illustrate the potential of utilizing SHI assessments, particularly NL -SHI, as practical and sensitive tools for the quantitative evaluation of soil health in the croplands impacted by wastewater irrigation.

Duplicate and Simultaneous Submissions

Re: Action required: Potential duplicate submission - <AGWAT-D-24-01377 + EURAGR15614>

Dear Dr Zhang,

Our duplicate-manuscript checking-software has detected a duplicate submission of your paper AGWAT-D-24-01377. The details are provided below.

When you submitted your paper you agreed with our code which states "...Articles submitted for publication must be original and must not have been submitted to any other publication." We need to have an explanation of what has happened.

I refer you to the code of publication ethics at
https://publicationethics.org/files/u7141/1999pdf13.pdf

If I do not hear from you within 10 days, both manuscripts will be rejected.

Yours sincerely

Enrique Fernández
Editor-in-Chief
Agricultural Water Management

El 07/08/2024 a las 8:09, potentialduplicates@elsevier.com escribió:

ELSEVIER

Recipients: [jefer@irnase.csic.es (AGWAT), weiwu@nwsuaf.edu.cn (EURAGR)]

Dear Editors,

We've identified similarities in manuscripts recently submitted to your journals. You can find more inform
submission by using the **Evaluate Manuscript** feature in Editorial Manager.

Hiperprolific authors

COMMENT

SPACE Astrophysics' long relationship with the military p.173

HISTORY At last, a definitive biography of Helmholtz p.175

PSYCHOLOGY How a questionable personality quiz went global p.176

ECOLOGY Pathogen could wipe out New Zealand's oldest tree species p.177

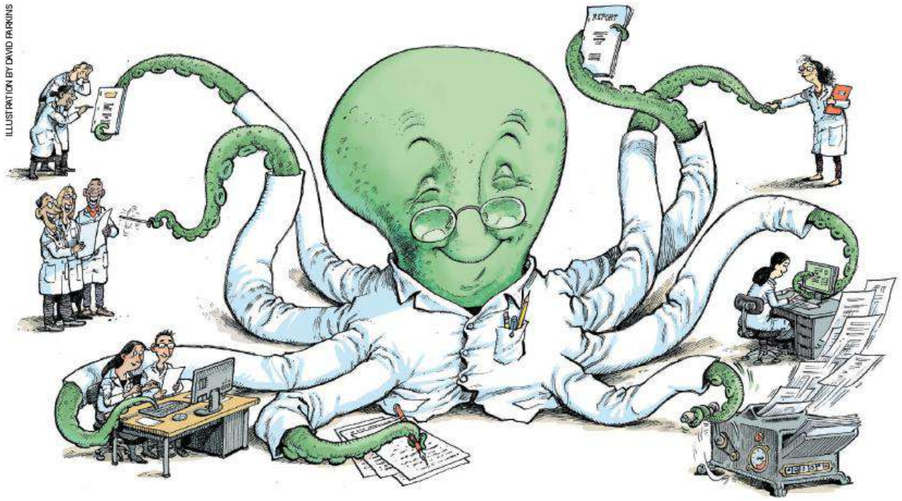


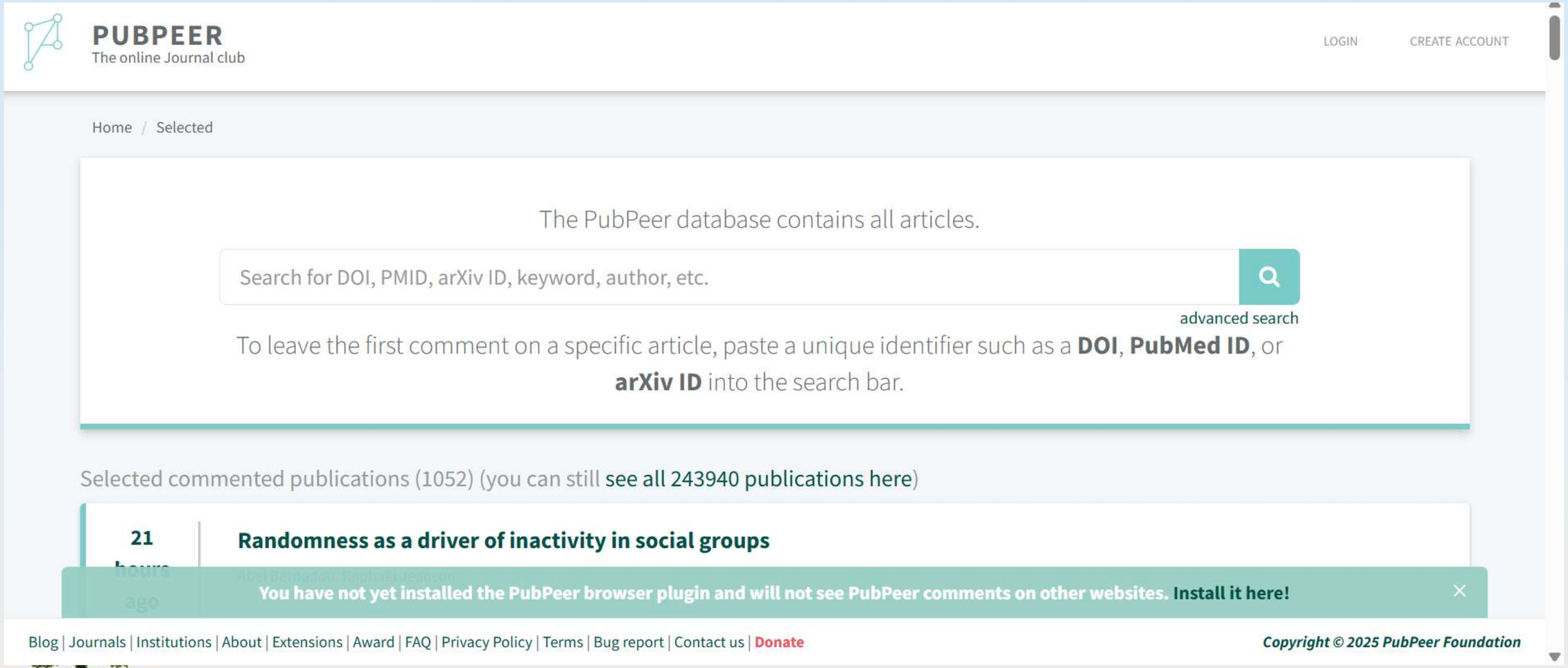
ILLUSTRATION BY DAVID PARKINS

The scientists who publish a paper every five days

To highlight uncertain norms in authorship, **John P. A. Ioannidis, Richard Klavans** and **Kevin W. Boyack** identified the most prolific scientists of recent years.

168 | NATURE | VOL 561 | 13 SEPTEMBER 2018

The PubPeer website: do you want to become notorious?



The PubPeer website: do you want to become notorious?

Geoenvironmental investigation of Sahure's pyramid, Abusir archeological site, Giza, Egypt

Heritage Science (2022) - 9 Comments
doi: 10.1186/s40494-022-00699-1 issn: 2050-7445

Abdelrhman Fahmy, Eduardo Molina-Piernas, Salvador Domínguez-Bella, Javier Martínez-López, Fatma Helmi

#1 ***Palla ussheri*** comment accepted May 2024

- Abstract first line: "Abusir is the name of an elaborate burial area in Egypt, dotted with 19 pyramids and other temples, stretching on the western side of the Nile from the south of the Giza Plateau to the northern rim of Saqqara. "

**Source: Literally taken from Yahoo News

- Fig 2a: Taken from Wikipedia, not from Borchardt.

- "the pyramid substructure access is found slightly above ground on the pyramid's north face [32]. A short descending corridor lined with granite leads into a vestibule [34]. In addition, the route and its walls are

Ethics in publishing

After 20 years of work everybody will know you: which opinion will the others have of you?

A standard researcher has room in the scientific community: if his/her work increases the current knowledge, even if little, it is worthy to be taken into account.

A researcher who does not consider the ethics in publishing, i.e. who makes any type of fraud, it does not have room in the scientific community.

⟶ Scientific literature MUST be reliable

Fraud is not anecdotic: each level of fraud is relatively high and editorials spend a lot of effort to avoid it.

Do not cheat. It can be very costly to you: Article withdrawal / retraction / removal
Retraction lists

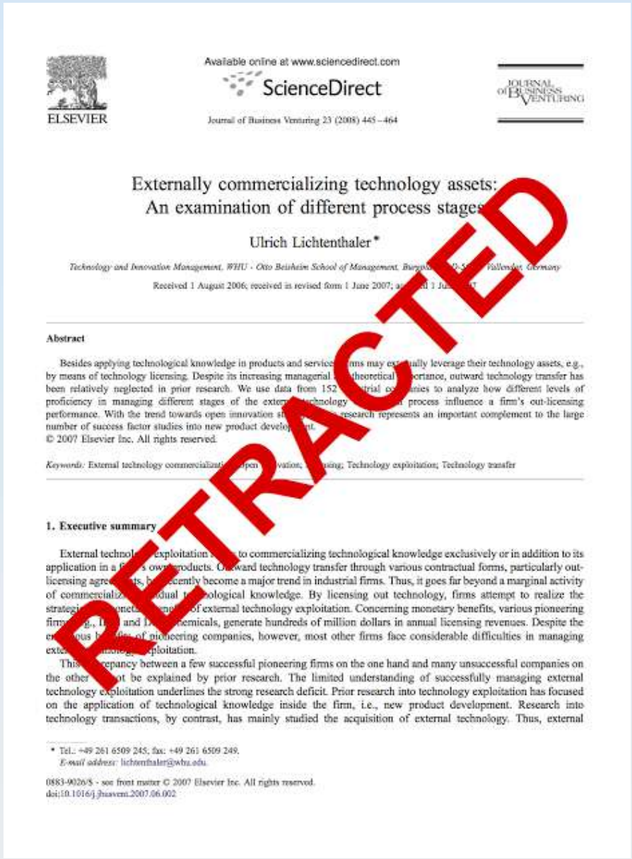
Consequences

What are the potential consequences ?

Potential consequences can vary according to the severity of the misconduct and the standards set by the journal editors, institutions and funding bodies.

Possible actions include:

- **Written letters of concern and reprimand**
- **Article retractions**
- **Some form of disciplinary action on the part of the researcher's institute or funding body**



Available online at www.sciencedirect.com

ScienceDirect

Journal of Business Venturing 23 (2008) 445–464

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JOURNAL OF BUSINESS VENTURING

Externally commercializing technology assets: An examination of different process stages

Ulrich Lichtenthaler*

Technology and Innovation Management, WHU - Otto Beisheim School of Management, Burgpl... Vallendar, Germany

Received 1 August 2006; received in revised form 1 June 2007; ... 1 Ju...

RETRACTED

Abstract

Besides applying technological knowledge in products and service... firms may ex...ually leverage their technology assets, e.g., by means of technology licensing. Despite its increasing managerial ... theoretical ...portance, outward technology transfer has been relatively neglected in prior research. We use data from 152 ...trial ex...nies to analyze how different levels of proficiency in managing different stages of the exter... technology ... process influence a firm's out-licensing performance. With the trend towards open innovation s... research represents an important complement to the large number of success factor studies into new product develo...

Keywords: External technology commercialisati... pen ...vation; ...sing; Technology exploitation; Technology transfer

1. Executive summary

External technol... exploitation ... to commercializing technological knowledge exclusively or in addition to its application in a ... 's own products. Outward technology transfer through various contractual forms, particularly out-licensing agre...ts, ha...cently become a major trend in industrial firms. Thus, it goes far beyond a marginal activity of commercializ... ...dual ...ological knowledge. By licensing out technology, firms attempt to realize the strategi... ...nefits ... of external technology exploitation. Concerning monetary benefits, various pioneering firm... g., ... and ... ...emicals, generate hundreds of million dollars in annual licensing revenues. Despite the ex...ous ... of pioneering companies, however, most other firms face considerable difficulties in managing ext... ...exploitation.

This ...ancy between a few successful pioneering firms on the one hand and many unsuccessful companies on the other ...ot be explained by prior research. The limited understanding of successfully managing external technology exploitation underlines the strong research deficit. Prior research into technology exploitation has focused on the application of technological knowledge inside the firm, i.e., new product development. Research into technology transactions, by contrast, has mainly studied the acquisition of external technology. Thus, external

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doi:10.1016/j.jbusvent.2007.06.002

Ethics in publishing

After 20 years of work everybody will know you: which opinion will the others have of you?

The risks of bad practice in Academic Publishing? Search on the following topics:

- *Special Issue on Misconduct in Scientific Publishing*
- *Special Issue on Publication Ethics and Research Integrity*
- *Predatory journals*
- *Retraction in academic publishing*

Publishing scientific papers

1. Choosing the journal
2. Ethics in publishing
3. Checking the manuscript
4. What do you have to know prior to submission?
5. The Editor's decision

Common mistakes

- The Title does not reflect the content of the paper.
- The Abstract is badly structured: a poor abstract will disappoint the reader, which risks the potential impact of your article.
- Poor Introduction: no description of the issues, the knowledge gap and the problem to be solved.
- References: too many, badly placed, lack of key ones, the original ones are not mentioned…
- The M&M is confusing and with relevant details missing.
- Results are not supported by statistics.
- Too many results are provided, with irrelevant comments.
- It is not clear which results are from the authors' work and which taken from the literature.
- The findings do not answer the Objectives.
- It is not clear whether the hypothesis is correct.

Common mistakes

- The article is not properly focused: the message to the reader is not clear.
- Too much speculation in the Discussion.
- The novelty of the paper is not clear: what the study's findings add to existing knowledge?
- The Conclusions are not supported by the results.
- The education and dissemination aspects are not addressed: the implications and benefits of the findings are not explained.
- The paper is badly arranged, with format errors and poor English.

After *Scientific Writing for Impact Factor Journals*. Eric Lichtfouse. Nova Science Publishers, 2013

Ready to submit your paper? Check it again!

Check before submission

1. Does your paper match the Scope of the journal? Be sure you choose the right journal.

2. Have you taken into account the *Guide for Authors* of the journal?

3. Is your article properly focussed? Be sure the message to the reader is clear.

4. Is the number & quality of *Figures* and *Tables* acceptable?

5. Is the novelty of your findings specified in the *Abstract*, in the *Discussion* and in the *Conclusions*? And, if possible, in the *Title*?

6. You show the most relevant results only, and all of tem are properly discussed.

7. It must be clear which results are yours and which ones are from the literature.

Check before submission

8. The implications of your findings are specified.

9. The use of the language is correct: perfect English, accepted symbols, correct units, no unnecessary abbreviations, no editing errors…

10. The article is properly arranged: well chosen sections and subsections, well made paragraphs…

11. All the authors agree on you submitting the paper.

After *Scientific Writing for Impact Factor Journals*. Eric Lichtfouse, 2013.

The corresponding author

- The Editor will communicate with the corresponding author only.
  For this reason, he/she must be an experienced researcher and writer
- The corresponding author is responsible of the whole process being ON TIME.
- The corresponding author MUST inform the coauthors on any news related to the paper.
- The corresponding author is the person in charge of submitting the paper: if inexperienced, the coauthors should help them.
- Also, bare in mind that the correction of the proofs is not a task for the corresponding author only: it is for all the coauthors.

Ready to submit your paper?

Now is the time to think of the *Highlights* and the *Graphical Abstract*.

Highlights

4-5 sentences of 80-100 characters each, with the key aspects of your work

Highlights

We study the nutrient-leaching losses in an Ultisol cultivated with sugarcane.

The leaching of N, both native and derived from fertilizer, was considerable.

Similar behavior was not observed for sulfur and phosphorus.

Significant amounts of potassium, calcium and magnesium were leached.

- Do not leave it for the submission day: do it after writing the article, on the 7-10 days of reading and checking. Those readings will allow you to identify the most relevant aspects of your paper

Highlights

4-5 sentences of 80-100 characters each, with the key aspects of your work

Do not make these errors:

This is already known

Most roots of a corn crop are in this layer, so this is not new either

Research Highlights

Sap flow of sunny side was significantly higher than shady side and male parent.

Soil water of 0-100cm was key factor to transpiration of seed corn.

T_a and RH had higher correlation with sap flow in mature stage in hourly scale.

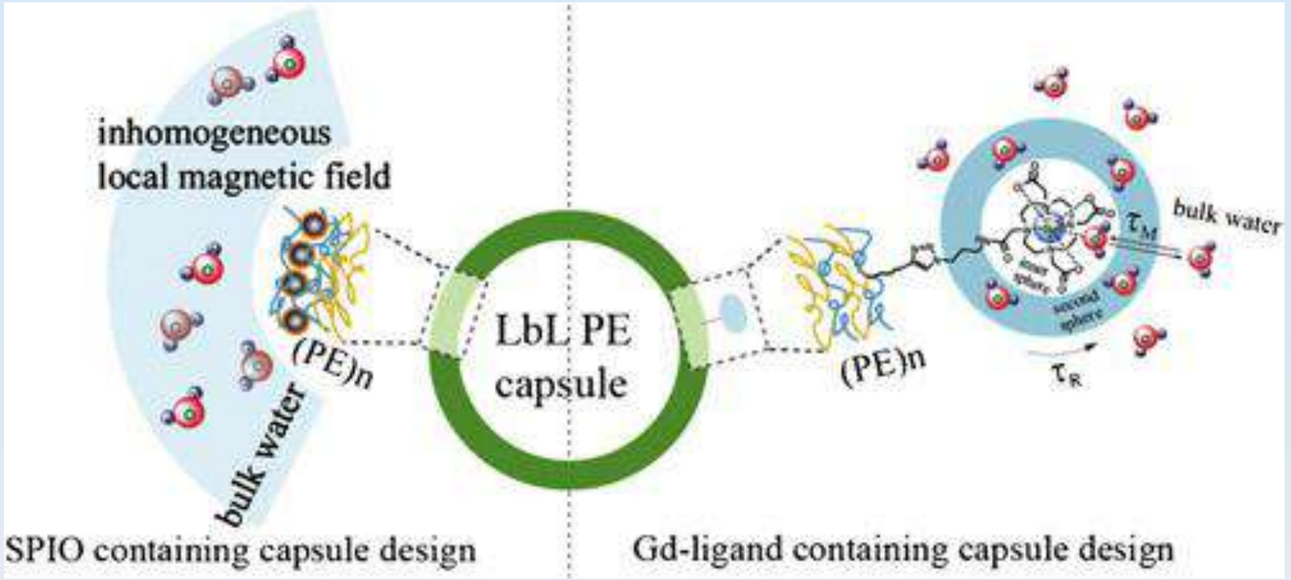
Soil temperature was the main affecting factor of MP sap flow in daily scale.

Higher correlation as compared to which variable?

MP?

Graphical Abstract

It is not compulsory, but attracts the reader



Layer-by-layer capsules for magnetic resonance imaging and drug delivery
Hua Ai
Advanced Drug Delivery Reviews, Volume 63, Issue 9, 14 August 2011, Pages 772-788
http://dx.doi.org/10.1016/j.addr.2011.03.013

- Prepare it with care: a bad *Graphical Abstract* repels the reader. Do not leave it to the end.

Publishing scientific papers

1. Choosing the journal
2. Ethics in publishing
3. Checking the manuscript
4. What do you have to know prior to submission?
5. The Editor's decision

Who is Who in a Journal

The Publisher

The Journal Manager

The Editor-in-chief

The Executive Editor

The Associate Editor

The Editorial Board

Technical staff

Administrative staff

The production team

<u>In Special Issues</u>:

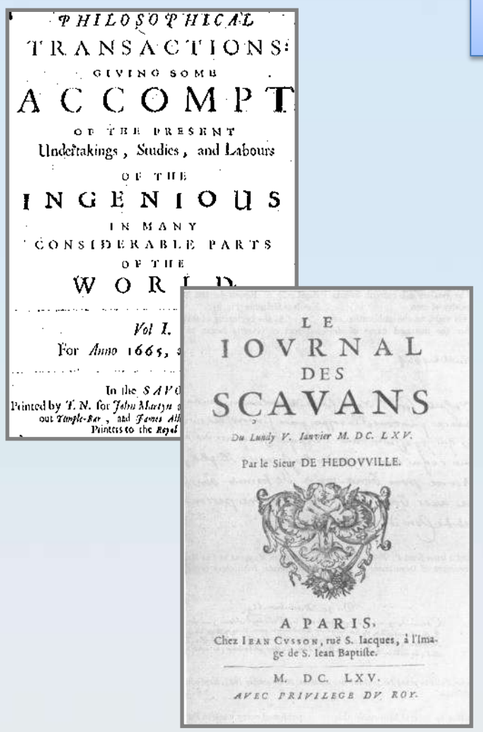
The Guest Editor

The Managing GE

The Overseeing EiC

The Publisher

Journal publishing has thrived for over 340 years but the fundamental role of Publishers remains unchanged


PHILOSOPHICAL
TRANSACTIONS:
GIVING SOME
ACCOMPT
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
INGENIOUS
IN MANY
CONSIDERABLE PARTS
OF THE
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Vol I.
For Anno 1665,
In the SAV
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out Temple-Bar, and James All
Printers to the Royal

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Par le Sieur DE HEDOVVILLE.
A PARIS,
Chez IEAN CVSSON, ruë S. Iacques, à l'Ima-
ge de S. Iean Baptiste.
M. DC. LXV.
AVEC PRIVILEGE DV ROY.

First scientific journals published in 1665

Registration

Timestamp

Certification

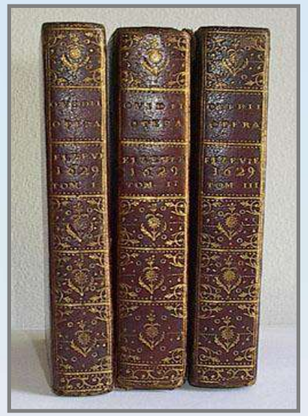
Peer review – validity & integrity

Dissemination

Medium to share findings

Preservation

Preserve and archive records of science



Elzevirianas circa 1629

The *cover letter*

هـيـئـة البيئـة - أبـوظـبـي
Environment Agency - ABU DHABI

Editors-in-Chief, *Agricultural Water Management,*

Dear Enrique, Nebo, or Peter.

Re: AGWAT ms. *Irrigation management with saline groundwater of a date palm cultivar in the hyper-arid United Arab Emirates* by Al-Muaini *et al.*

It is with pleasure that we submit to *Agricultural Water Management* our manuscript from the recent work we have been carrying out on the irrigation of date palms with saline groundwater in the hyper-arid desert of the United Arab Emirates. We think our research closely fits the scope of *Agricultural Water Management* for it addresses:

- Salinity management and strategies for improving the use of saline water in agriculture
- Exploitation and protection of agricultural water resources
- The institutional and regulatory aspects of agricultural water management (water pricing, allocation and competition).

We have read the Ethics in Publishing, and Declarations of Interest sections of the Author Information Pack, and we are fully compliant. We also declare that the work has not been published elsewhere, except in the acceptable forms of either an Abstract, or a non-refereed part of a published lecture. The publication has been approved by all the authors and their Institutes. The work has not been submitted elsewhere.

We think our paper will be valued by the readers of *Agricultural Water Management* for it contains innovative experimental results and new analyses that will be implemented in the recent Law 5 of the Government of Abu Dhabi. This regulation will restrict groundwater takes for agriculture and date palms across the Emirates. Our research has provided the allocation values that will be used for date palms. The highlights of our paper include that:

- Irrigation of date palms consumes about one third of groundwater use in the UAE
- Law 5 has been passed in Abu Dhabi to protect groundwater by restricting irrigation
- Currently date palms are irrigated using, in general, about 275 L day^{-1}
- Sapflow measurements reveal the seasonal pattern of actual water use of variety Lulu
- Two levels of salinity, 5 and 15 dS m^{-1} were studied
- Seasonal patterns of irrigation are proposed for Law 5 with annual savings of 25-50%

We look forward to receiving the referees' reviews on our paper. We have added, over the page, suggestions for 4 referees.

Best wishes

Ahmed Al-Muaini, Environment Agency – Abu Dhabi

Brent Clothier, Plant & Food Research, New Zealand

PO Box 45553 ,Abu Dhabi, United Arab Emirates | T +971 2 445 4777 | F +971 2 442 3339

Title and authors

The paper fits within the scope of the journal

- The work has not been submitted to another journal
- All authors are aware of the submission
- There are no conflicts of interest

Highlight both the novelty of the paper and main implications

Also:

- If your paper has been rejected by another journal, say it. It increases the confidence of the editor on you being an honest author and, therefore, on the reliability of your work
- Indicate whether you have used AI

Suggesting reviewers

- Most journals have a section for you to propose/exclude reviewers. If not, you can address this aspect in the cover letter.

Take into account:

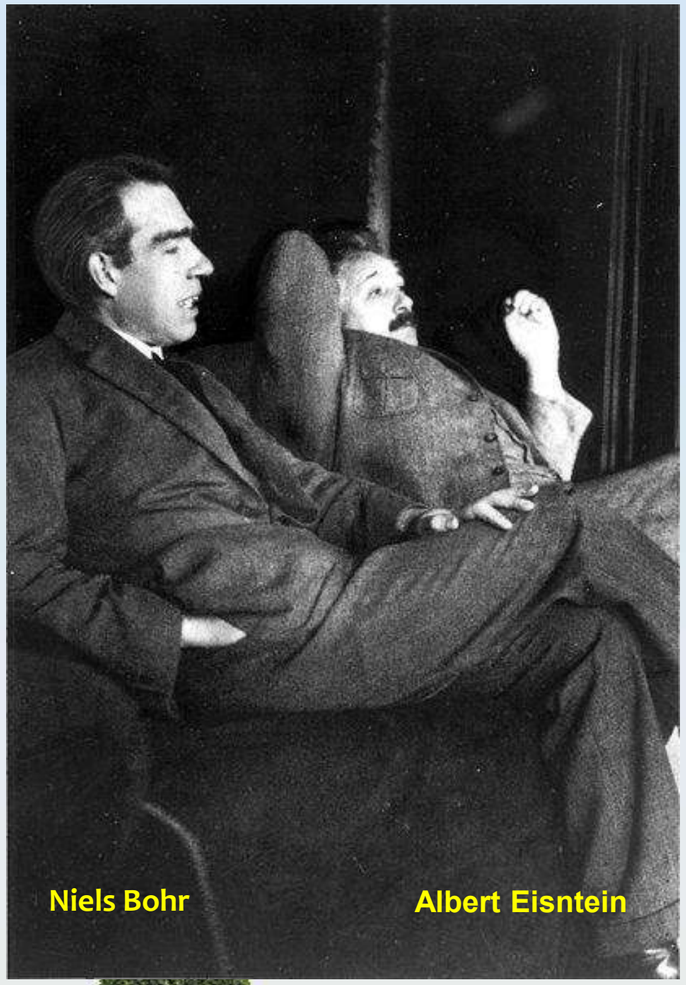
- The Editor may consider, or not, your suggestions. Quite often the editor chooses one of the reviewers suggested by you (rarely more than one). This is provided they are experts o the topic of your paper.

- If all the reviewers suggested by you are from your own country, the Editor may not trust your suggestions.

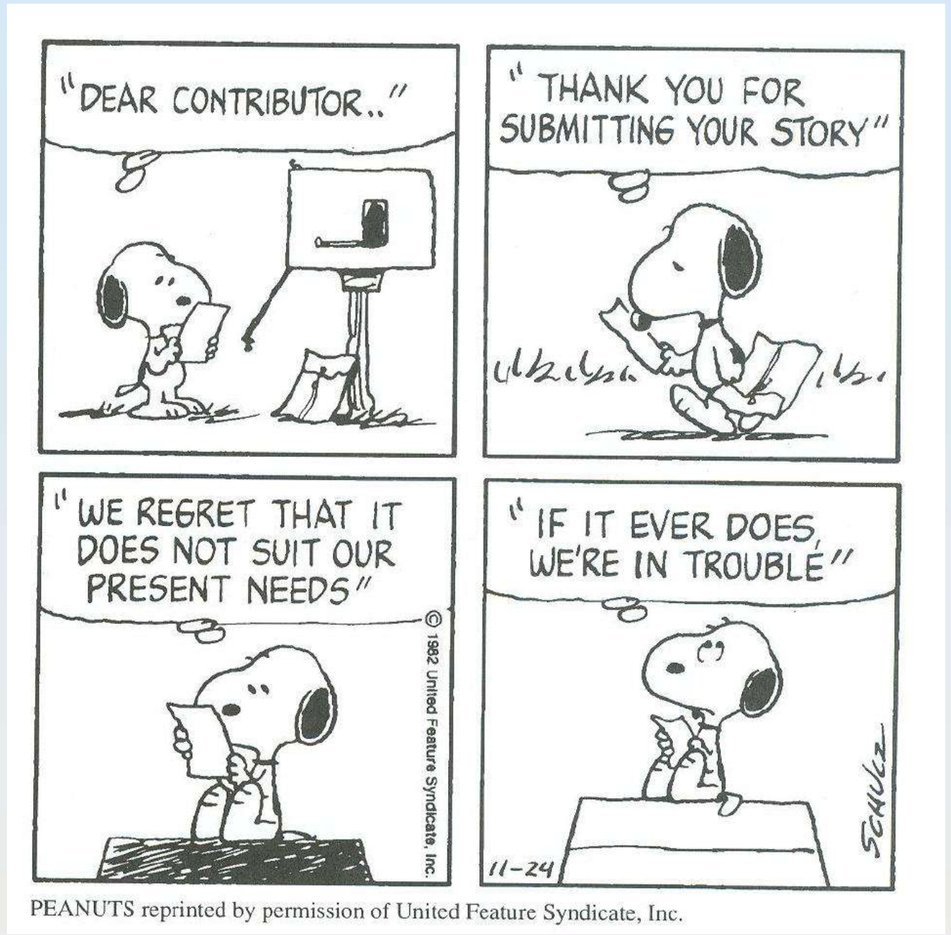
- Your suggestions are particularly useful when there are very few experts on the topic of your paper. They then will help the Editor to choose the reviewers and will shorten up the review process of your paper.

After submission

Just wait for the Editor's decision.



Do not be too disappointed if your paper is rejected. most journals have a rejection rate of 70-80 %



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Communicating with the journal after submission

- The review process may take several months, normally in between 2 and 4.
- If you have no news in 3-4 months after submission, you can ask to the Journal Manager on the status of your manuscript.
- Use the application of the journal. This will allow to keep records of all correspondence.

Take into account:

- Delays are usually due to difficulties on finding reviewers for your paper, or to the Editor having received two contrasting reviews (in this case a third reviewer is usually invited).
- Do not write impolite letters to the Editor or to the Journal Manager. Very often, reviewers do not accept the invitation of the Editor because the paper is poorly written and difficult to understand (the delay is not because of the Editor, but because of you).

Publishing scientific papers

1. Choosing the journal
2. Ethics in publishing
3. Checking the manuscript
4. What do you have to know prior to submission?
5. The Editor's decision

The decision letter

The decision of the Editor can be:

1. Accepted
   This is very rare. Open a bottle of champagne.
2. Accepted with minor changes
   This is very good news. Modifying the paper will require Little work.
3. Accepted with major changes
   You must address thoroughly each one of the reviewer's comments.
   If the reviewers are not satisfied with your answers and changes in the paper, you are in trouble.
4. Rejected *prior assessment*
   The Editor considers that your paper is not suitable for publication.
5. Rejected with an invitation to resubmit
   The editor considers that your paper has potential, but he amount of required work to improve it is high.
6. Rejected
   You can ask the Editor to reconsider his/her decision just if you are 100 % sure that the reviewer's concerns are not justified. Otherwise, do not send a complain letter.

The cover letter for *R versions* of your paper

In cases 2 and 3, you will have to submit:

- A new cover letter
- A list of each reviewer & editor comments, with your answers
  Do not say "All reviewers' concerns have been addressed and changes are made in the paper"
- A modified version of your paper
  Two copies are usually required: a copy with all changes clearly marked and a clean copy.

- Be humble…
  If a reviewer says that the English is poor, have your paper edited by a professional editor.
  If a reviewer says that such paragraph is difficult to understand, rewrite it.

…but defend your point of view if evidence supports you
If you disagree with the reviewer, outline your results, or published information, supporting your point of view. Use facts, no personal opinions.
Do not be impolite: it will discredit you.

The cover letter for *R versions* of your paper

Remember:

- Reviewers are not your enemies: a good, sound review helps greatly to improve a paper.

- Reviewers work hard (4-5 hours to review a standard paper) despite of not being paid and receiving no recognition.

  Thank the reviewer, and the editor, if you feel they deserve it.

- Facilitate the work of the reviewer.

  - Follow the *Guide for Authors*: double space, number the lines…
  - Address each one of their comments, one by one, and indicate clearly where in the corrected version has you made the required change.

Reviewers' misconduct

- You may receive poor review reports. The EiC, we use the term generic reviews to refer to a superficial and poor review report, generally negative and even with rude comments such as "Standard English not good".

- Some reviewers might 'suggest' the authors to reference papers written by themselves and with minimal relation to the article.
  If you detect that, please send a note to the EiC. This is call citation coercion. In these cases, the EiC must start a thorough investigation, which may end by blacklisting the reviewer.

More information in:

https://www.elsevier.com/connect/top-tips-on-identifying-citation-misconduct

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DE CIENCIA
E INNOVACIÓN

CSIC
Consejo Superior de Investigaciones Científicas

Seville, October 22, 2009

Tim Wheeler
Associate Editor
Agricultural and Forest Meteorology

Dear Dr. Wheeler,

We are submitting a new version of the manuscript entitled "Irrigation scheduling from stem diameter variations: a review", by J.E. Fernández and M.V. Cuevas, which we have modified according to yours and the reviewers' comments. Below you have a detailed list of the changes we have made. As requested, we have included a version of the manuscript in which all the changes we have made appear in a different colour.

Yours sincerely.

Dr. José Enrique Fernández

José Enrique Fernández Luque
Investigador Científico
jefer@irnase.csic.es

INSTITUTO DE RECURSOS NATURALES Y AGROBIOLOGÍA
Avenida Reina Mercedes, 10
41012-Sevilla
Tel.: 95 4624711 (ext. 173)
Fax: 95 4624800

First review of the manuscript AGRFORMET-D-09-00212

By J.E. Fernández and M.V. Cuevas
Seville, October 2009

The Editor

Reviewer 1 would like to see your text modified in part to bring it closer to the interests of readers of Ag For Met
Bellow you can see our answer to the reviewer's comments

Table 1 should be deleted
The table has been deleted, and the list of references has been corrected accordingly

Reduce these 30 pages to 25-27 pages, based on the comments of the reviewers
This new version is shorter than the previous one. We have deleted 4.5 pages of text, 4 pages of references and the 2 pages of Table 1.

Reviewer 1

This review article presents an extensive description of several approaches available for detecting plant water stress. Its focus is on plant-based water stress indicators presenting the historical aspects of each indicator. However most of the text is dedicated to the Stress Diameter Variation (SDV) including the major difficulties for interpreting SDV records and also an irrigation scheduling history based on such records.
We agree with the reviewer. Although the title clearly suggests this is a review on the use of SDV records, we mention other plant-based water stress indicators from the beginning of the manuscript, which may confuse the reader. In this new version we have added a comment at the end of Section 1, clearly stating that this work is focussed on the use of SDV records for irrigation scheduling. This is also clearly indicated in the new Abstract section.

It is important to note that after 1117 lines of text nothing is said about possible relationships between SDV and any readily available environmental element. As described in Section 2.1, the atmospheric conditions control the plant water use and this was used to explain the origin of the water stress and the SDV. Consequently, a reader of Agricultural and Forest Meteorology journal would expect to find some attempt (even an empirical one) to estimate SDV from any atmospheric demand indicator. However, such expectation is frustrated.
In Sections 1, 3 and 4, we give a substantial amount of information on the influence of both the soil water availability and main atmospheric variables on the SDV records. In addition, this work shows key information on the so called reference equations or baseline relationships (L697 and Table 2), which shows the relationships between SDV-derived indices and main atmospheric demand indicators. This last point could be especially satisfactory for readers looking for information on how SDV records respond to evaporative conditions.

In case of rejection

Is your paper rejected? Publishing a bad paper is not good, either for you or for the journal

- Analyze why your paper has been rejected
  - Read with attention and evaluate objectively the reasons for rejection.
  - The editor and reviewers are usually right: accept the critics and learn.
  - You can “fight back”, but never base your defence on personal opinions: use facts, neat results, well supported evidence…
- Correct the paper and submit it again
  - **To the same journal**
    You can do it if you have received a rejection with an invitation to resubmit. You must indicate, in the cover letter, that this is a new version of a paper previously rejected (give the reference).
  - **To a different journal**
    You do not have to explain that the paper has been previously rejected in another journal, but the Editor will appreciate it.

In both cases: explain that the previously criticized aspects have been corrected

In case of acceptance

Congratulations! The scientific work is not finished until being published

- After receiving the acceptance letter
  - You can include the accepted article in your CV (*in press*).
  - The acceptance letter can be used to probe that your paper is *in press*. In a few days you will receive the DOI, which you must add to the reference of your paper.

The DOI (*Digital Object Identifier*) is the reference of an electronic version of your paper.
By clicking on the DOI the article is visible on the Internet.

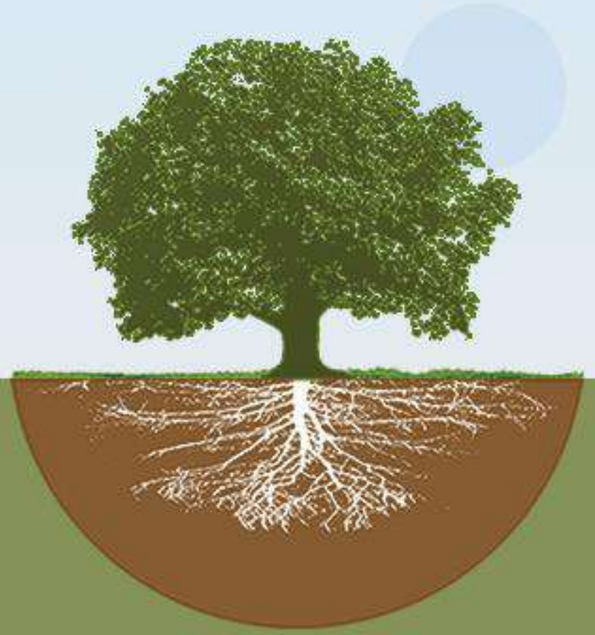
- The full reference (volume, issue No., page number) will not appear until 2-3 months later, depending on the journal.

- Before receiving the DOI you will receive the *Proofs*.
  - Address them immediately, to avoid delays on publication.
  - Get all the authors involved on the corrections of the proofs (read ALL the article with care).

Thank you!

Writing Scientific Papers

J.E. (Enrique) Fernández



Terra vita est

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My background on *Academic Writing and Publishing*

- Editor-In-Chief of *Agricultural Water Management (since 2012)*
- Member of the Editorial Board of *Plant and Soil (13 years)*
- Member of the Reviewer Board *of Tree Physiology (10 years)*
- Reviewer for more than 40 journals

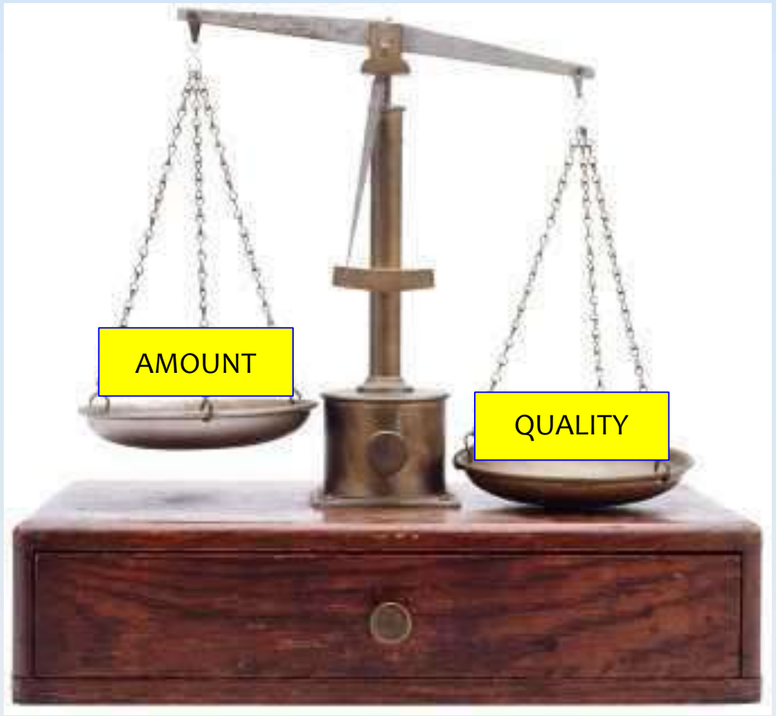
No. of papers edited > 3500

No. of papers reviewed > 500

Academic Writing

1. Preliminary remarks
2. The scientific language
3. Structure of the paper: features of each section
4. Writing the paper

How important is to write good papers?



Your papers are your
visiting card
in the scientific community

Journal Citation Report

	RANK	TITLE	IMPACT FACTOR	CITED HALF-LIFE
		ACOUSTICS		
Q1 1er quartile	1	ULTRASON SONOCHEM	2.796	5.1
	2	ULTRASOUND OBST GYN	2.690	5.7
	3	ULTRASOUND MED BIOL	2.395	7.1
	4	ULTRASCHALL MED	2.394	3.5
	5	IEEE T ULTRASON FERR	2.160	7.0
	6	IEEE T AUDIO SPEECH	1.848	2.1
Q2 2° quartile	7	J ACOUST SOC AM	1.717	> 10.0
	8	ULTRASONIC IMAGING	1.710	> 10.0
	9	WAVE MOTION	1.391	8.7
	10	J SOUND VIB	1.364	9.1
	11	SPEECH COMMUN	1.229	7.1
	12	J ULTRAS MED	1.087	6.5
Q3 3° quartile	13	ULTRASONICS	1.084	7.2
	14	J CLIN ULTRASOUND	0.843	9.9
	15	J AUDIO ENG SOC	0.824	> 10.0
	16	APPL ACOUST	0.789	8.1
	17	J VIB ACOUST	0.728	> 10.0
	18	J VIB CONTROL	0.656	5.2
Q4 4° quartile	19	ACOUST PHYS+	0.622	5.6
	20	J COMPUT ACOUST	0.585	7.4
	21	PHONETICA	0.550	> 10.0
	22	ACTA ACUST UNITED AC	0.538	> 10.0
	23	SHOCK VIB	0.465	5.5
	24	SOUND VIB	0.321	7.8
	25	J LOW FREQ NOISE V A	0.227	> 10.0
	26	NOISE CONTROL ENG J	0.167	> 10.0

In the Spanish evaluation system:

1 Q1 paper ≈ 5 Q2 papers ≈ 25 Q3 papers

In some areas (e.g. Bacteriology) there are Q2 journals as important as Q1 journals

The work of a researcher

Three main tasks:
1. To design and make the experiments
2. To write a scientific paper
3. To publish it

- Bare in mind tasks 2 and 3 from the beginning of task 1

- Your work has no value until task 3 is accomplished

- If you finish the three tasks, but your work has little impact, you have failed

Your work may have little impact for three reasons:

- Your science is not good
- Your paper is badly written
- Your paper is well written but you have chosen a wrong journal

Academic Writing

1. Preliminary remarks
2. The scientific language
3. Structure of the paper: features of each section
4. Writing the paper

The scientific language

It must be clear, rigorous and precise

1. Clarity A scientific paper must be published and <u>understood</u>.

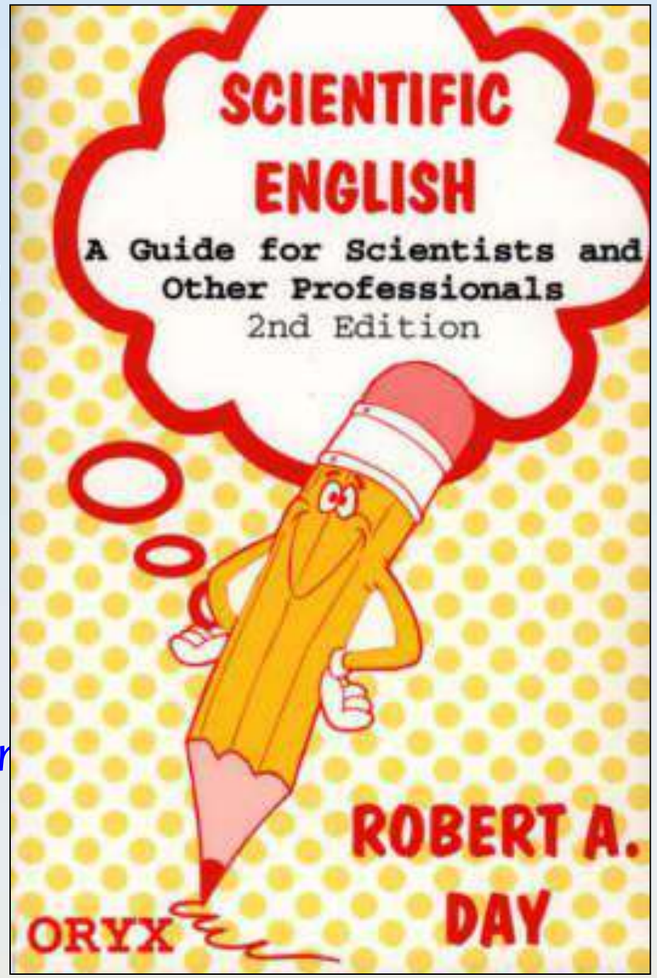
Key rule: avoid waste words; use simple, short words and

- Words

methodology	*method*
equivalent	*equal*
finalize	*end*
perform	*do*
utilize	*use*

- Expressions

the majority of
through the use of
a considerable amoun
at the present time
for the purpose of



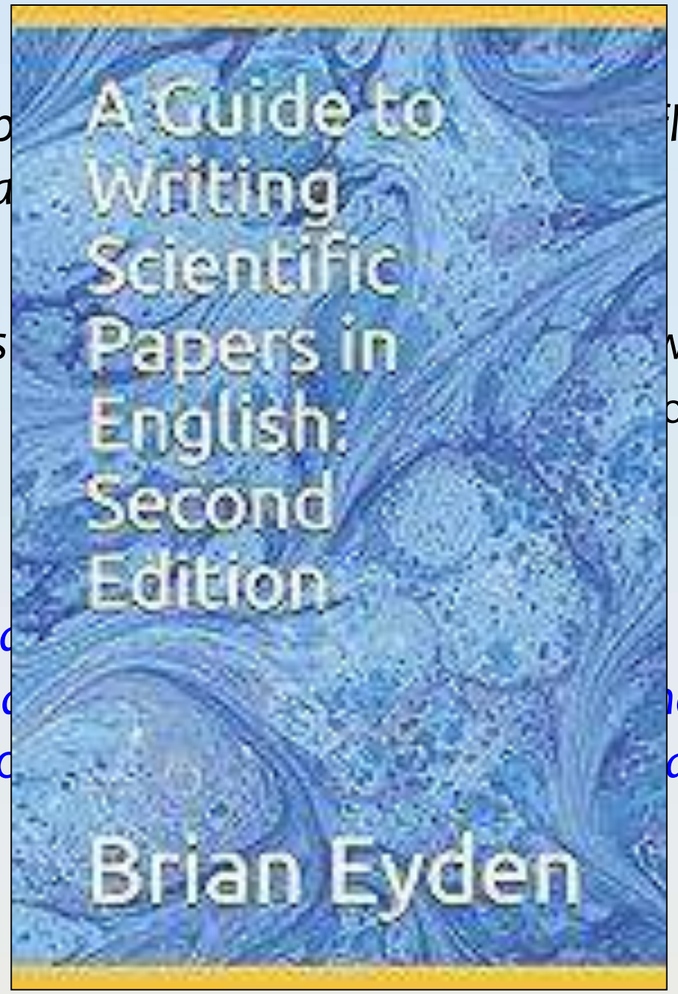
The scientific language

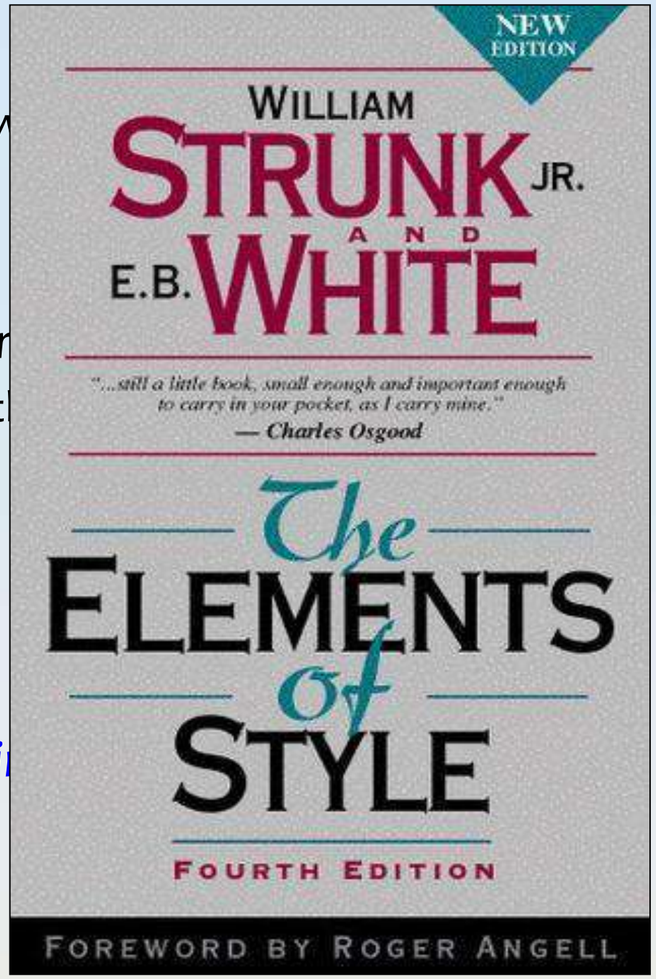
Keep it simple:

"State your facts as simple as possib *low*
or literary ornaments in a research a

"The best English is that which gives *vor*
of t

because better than *c*
for example " *c* *at*
useful " *c* *al i*





The scientific language

It must be clear, rigorous and precise

2. Rigor

- Use symbols and units accepted by both the scientific community and the journal to which the manuscript is going to be submitted.

- Do not use different names for the same thing.

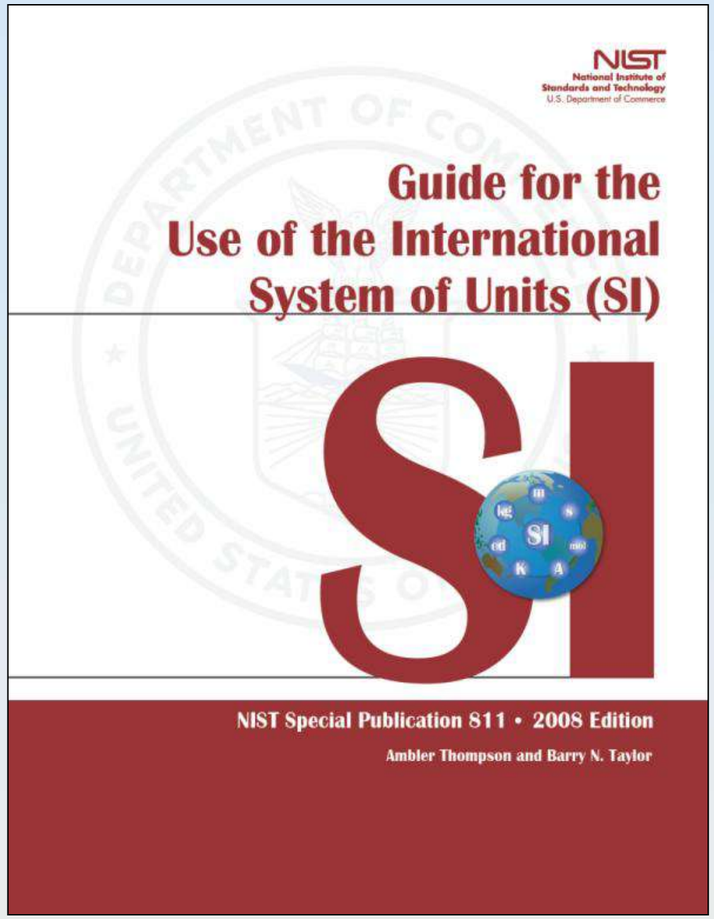
the irrigation period - *the irrigation season*
the software - *the programme*
the tree - *the plant*

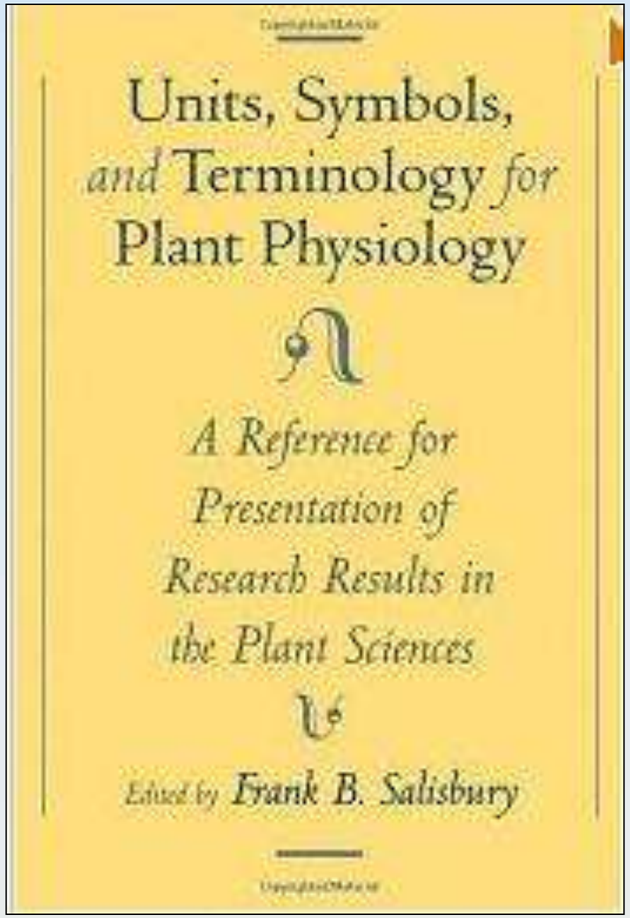
- Use British English or American English, according to the journal to which the manuscript is going to be submitted, but do not mix them.

program vs. *programme*
color vs. *colour*
minimize vs. *minimise* (Both accepted in the UK)

- Use terms, concepts and definitions properly. This says a lot on the quality of your work.

Consult reliable literature to be sure on the correct symbols and units





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Agricultural and Forest Meteorology 150 (2010) 135–151

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Review

Irrigation scheduling from stem diameter variations: A review

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Sap flow
Transpiration

ABSTRACT

Precise irrigation is essential in arid and semi-arid areas where water is scarce. This has impelled the scientific community to develop new technologies for scheduling irrigation. Of these, the ones relying on plant-based water-stress indicators have been found to have the greatest potential. Thus, measurements of stem water content, canopy temperature, sap flow, and stem diameter variation (SDV), among other variables, have proved useful not only for research purposes, but also for precise irrigation scheduling in commercial orchards. In this work we focus on the use of SDV records for irrigation scheduling. Of those mentioned above, this is the water-stress indicator that has received most attention from the scientific community, in terms of its potential for irrigating commercial orchards. Apart from being capable of an early detection of water stress, even if this is mild, SDV can be continuously and automatically recorded. This is a clear advantage over conventional indicators such as stem water potential (Ψ_{stem}). Among the SDV-derived indices that are useful for scheduling irrigation, the maximum daily shrinkage (MDS) and stem growth rate (SGR) are the most widely used. For young trees, and in periods of rapid stem growth, SGR could be a better indicator than MDS. In periods of negligible growth, however, SGR cannot be used as an indicator of plant water stress. Considerable differences in both MDS and SGR as a function of crop load have been reported for some species. It has been found, that SDV outputs are affected by seasonal growth patterns, crop load, plant age and size, and other factors, apart from water stress. Thus, expert interpretation of SDV records is required before using them for scheduling irrigation, which limits their potential for automating the calculation of the irrigation dose. For some species, the MDS vs Ψ_{stem} relationships show diurnal hysteresis and seasonal changes. Some relationships also shown an increase of MDS as the plant water potential fell to a certain value, after which MDS decreases as the plant water potential became more negative. This has been reported for peach, lemon, grapevine and olive, among other species. Although SDV-derived indices show a high plant-to-plant variability, in most cases the signal intensity is high enough to achieve an acceptable sensitivity, which, for peach, lemon and pepper has been found to greater than that of Ψ_{stem} and leaf conductance (g_l). In plum, apple and grapevine, however, Ψ_{stem} is more sensitive than MDS and SGR. In any case, the usefulness of an SDV-derived index for irrigation scheduling must be evaluated for the orchard conditions. In this work we describe the qualities that must be considered in such evaluation. One of them, the signal intensity, is being successfully used to schedule low-frequency irrigation in orchards of a variety of species, for both full- and deficit-irrigation treatments. When combined with aerial or satellite imaging, SDV measurements are useful for scheduling irrigation in large orchards with high crop-water-stress variability.

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Tree Physiology 17, 65–67

A unified nomenclature for sap flow measurements

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Received September 25, 1995

Summary A unified nomenclature for use in heat pulse measurement of sap flow is proposed. This unified nomenclature overcomes fundamental misunderstandings of the physics of heat and sap movement in wood. The nomenclature is also appropriate to other methodologies for sap flow measurement, such as heat balance methods.

Keywords: heat balance, heat pulse velocity, sap flux, sap velocity.

Introduction

Over the past decade, there has been a proliferation of methods that measure sap flow within stems. There are two broad methodological categories: heat pulse methods, which use pulses of heat as markers in the sap stream, and heat balance methods, which measure the components of heat transport from a continuous heat input. There has been confusion about the terminology of the heat pulse methods, mainly because of misunderstandings about the relationship between the movements of heat and fluid in the xylem. Reports based on heat balance methods (Daum 1967, Èermák et al. 1976, Sakuratani 1981, Granier 1987) have been more consistent because of the inherent simplicity of the underlying theory.

In this paper, we review briefly the various steps in deriving sap flow from heat pulse velocity and define each element. We detail the terms used by major authors in the field, especially in more recent publications. Finally, we suggest a unified nomenclature, compatible with the Système Internationale (SI), that will help to clarify the frequently confusing reports and avoid perpetuating these problems. This nomenclature is compatible with the heat balance methodology.

A variety of probe configurations and calculations have been devised to obtain heat pulse velocity (Marshall 1958, Swanson and Whitfield 1981). The compensation method, originally conceived by Huber and Schmidt (1937), is the most widely used. Because time is the primary measurement, the compensation method is remarkably robust and suited to field measurement. The time measured is the time required for a temperature difference between sensors to return to zero following a heat pulse input. Regardless of the configuration, relating the resulting heat pulse velocity to sap velocity requires interpretation of the results within the physical framework of a porous medium, the xylem.

Heat and fluid are transported within a porous medium in a manner that is well understood (Carslaw and Jaeger 1947). Heat is transported both by conduction and by convection as mass flow. Fluid is transported by mass flow alone. Because heat can interchange with the xylem matrix, a heat pulse transported in fluid mass flow tends to be left behind in a predictable manner. The process is analogous to the transport of a dye spot in a chromatography plate, in which the spot also gets left behind according to its propensity to interact with the chromatographic medium.

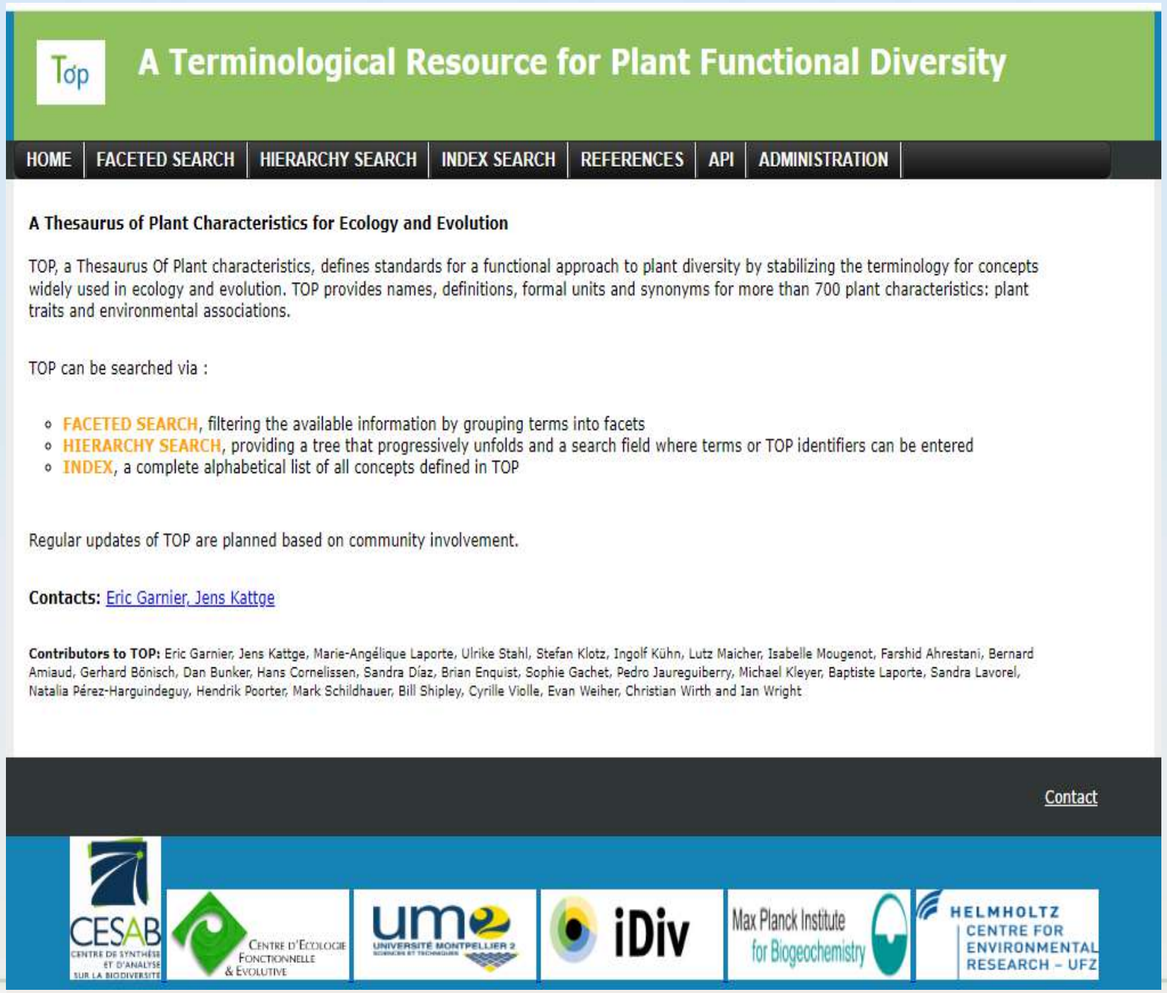
We must clearly distinguish between the heat pulse velocity, which we observe, and sap velocity. Although Zimmermann and Brown (1980) are frequently cited as a comparative reference for sap velocities, the values they report are heat pulse velocities, and are therefore inappropriate. Marshall (1958) describes movement of the heat pulse within "the stationary wood and the moving sap act(ing) like a single medium...", i.e., heat interchanges freely between sap and the wood. He pointed out that the ratio between sap velocity in the vessel or tracheid lumens and heat pulse velocity is proportional to three other ratios: (i) the ratio of conducting lumen area to total sapwood area, (ii) the ratio of sap density to density of the sap + xylem matrix, and (iii) the ratio of specific heat of sap to that of the sap + xylem matrix.

These three relationships set out the basis for a practical heat pulse estimation of sap velocity. We are normally interested in the total flow within the sapwood rather than sap velocity within the lumens, and we can find this by multiplying ratio (i) with the lumen sap velocity to give sap velocity expressed on total sapwood area. This calculation treats the entire conductive sapwood as a single medium. Note that heat pulse velocity is less than sap velocity expressed on the basis of total sapwood area, which is in turn much less than lumen sap velocity.

The practical expression of Marshall's three ratios lies in our ability to define the density and heat capacity of the sap and sap + matrix components. This requires an assumption (or experimental measurement) of both the density and the heat capacity of the xylem matrix material. Fortunately, both parameters are remarkably constant within and among species because cell wall material is similar. Therefore, heat pulse velocity can be related to sap velocity expressed on the basis

You can also consult specialised websites

https://top-thesaurus.org/home



The scientific language

It must be clear, rigorous and precise

3. Precision Be precise without been wordy.

PRECISE ?	PRECISE
from a nearby weather station	*from a weather station located at 400 m*
clear differences were found	*significant differences were found*
The yearly average precipitation was 500.1 mm	*The yearly average precipitation was 500.1 mm (period 1971-2009)*
Trunk diameter was ca. 40 mm on average	*Trunk diameter was 40.3 ± 2.1 mm (n = 26)*

Fluency is important. If you are bound to provide many data to be precise, consider including them in a table or similar.

The scientific language

It must be clear, rigorous and precise

3. Precision Avoid using too many adverbs.

The sample **quickly** degraded. *The sample degraded within 30 seconds*

The results are **highly** surprising. *The results deviate from the expected model by 45 %*

The solution was **carefully** mixed. *The solution was mixed using a magnetic stirrer at 300 rpm*

The algorithm **significantly** improved performance. *The algorithm improved performance by 12.4 %*

The scientific language

Active vs. Pasive voice

- Active voice (The subject performs the action. E.g. *We analyse the data using regression models*):
  Best used when you want to emphasize your actions or decisions, or when you're writing for a field or journal that favors clarity and directness

- Pasive voice (The subject receives the action. E.g. *The data were analyzed using regression models*)
  Best used when the actor is unknown, irrelevant, or obvious, or you want to emphasize the process or result, not who did it

Methods & Results – Often lean toward passive: "Samples were collected…"
Introduction & Discussion – Often better with active: "We hypothesize…", "We argue…"

Avoid overusing passive voice—it can make your writing dull or ambiguous.
If your journal or advisor has a style preference, follow that.

The scientific language

The paragraph Its organisation is essential for fluency, specially in the Discussion section.

- Each paragraph must be on a single aspect of the paper. Any new aspect must be on a new paragraph.
- If you are addressing a complicated aspect of the work, several paragraphs can be required. But every particular story must start and end in the paragraph.
- The paragraph should have 3 to 8 sentences. Be consistent: try to write all the paragraphs with the same length. Do not write paragraphs with 1 or 2 sentences.
- Do not include a sentence within brackets in another sentence: this penalizes fluency.
- The former applies to references: try to put them at the end of the sentence, not in the middle.

The scientific language

In addition to CLEAR, RIGUROUS and PRECISE, the article must be CONCISE and EASY TO READ:
Focus on the most important information and be FLUENT

The KISS rule: Keep It Short & Simple

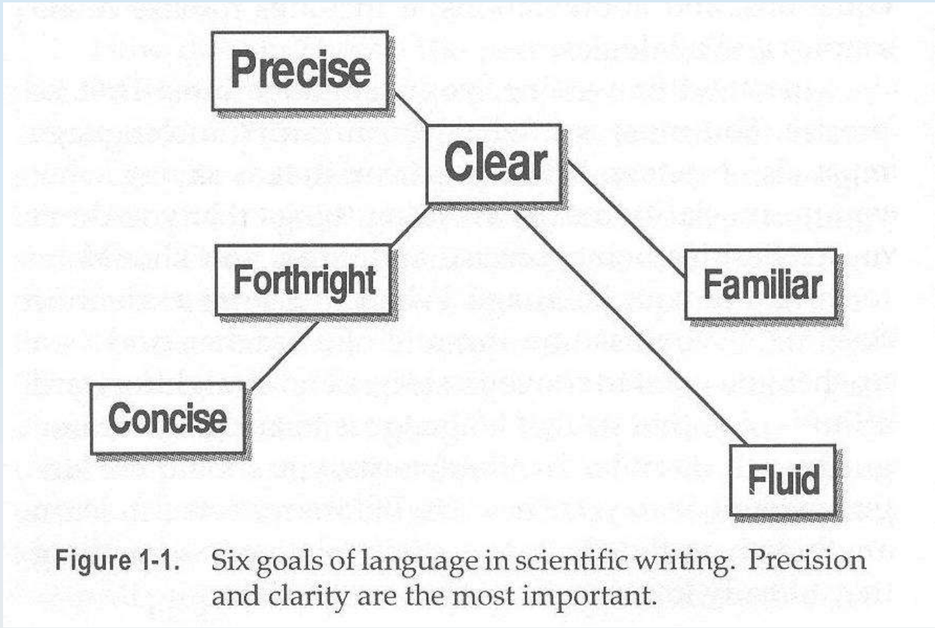


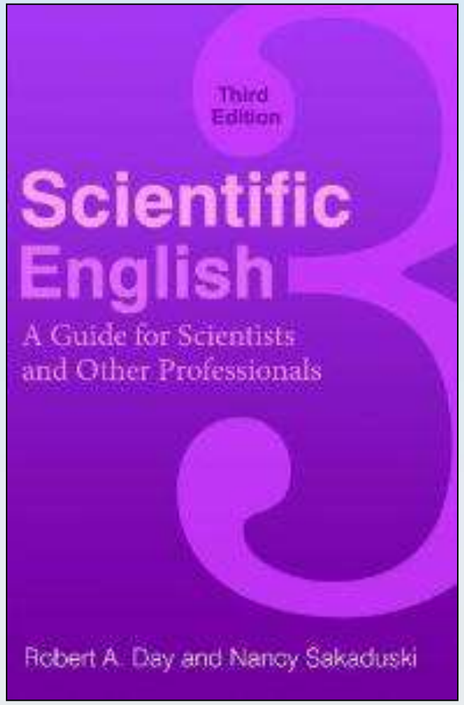
Figure 1-1. Six goals of language in scientific writing. Precision and clarity are the most important.

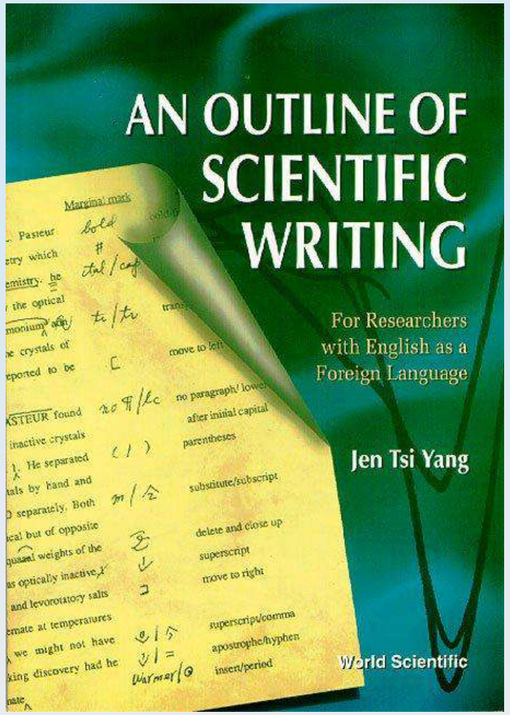
SOURCE: *The Craft of Scientific Writting*, by Michael Alley

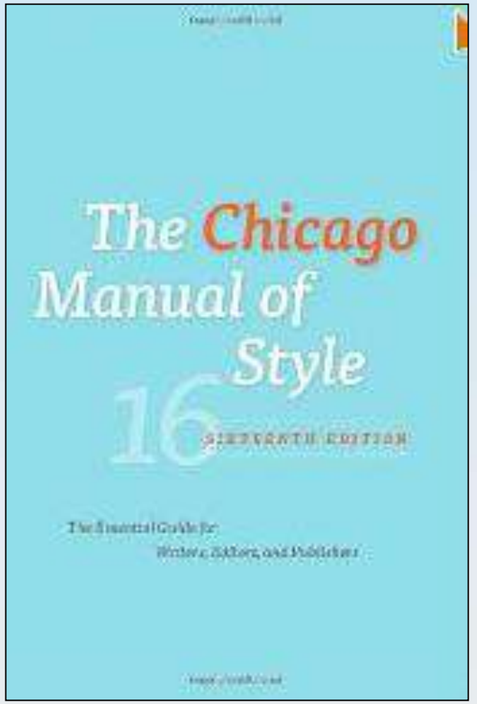
A badly written article has less chances of being published.

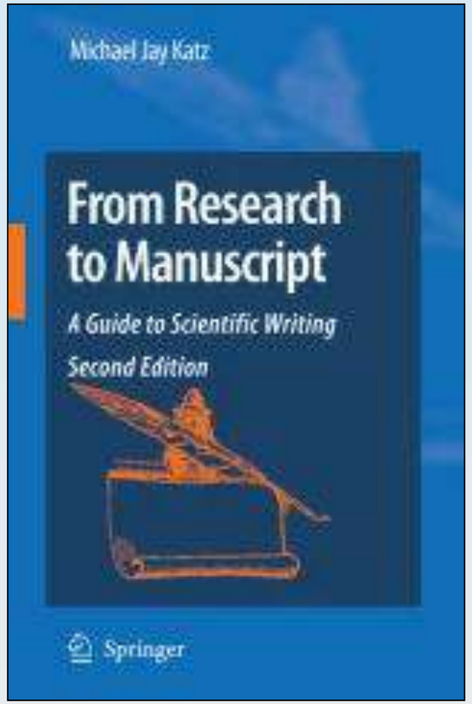
And, if published, the reader will think that the science behind is poor.

There are good books on the topic: use them



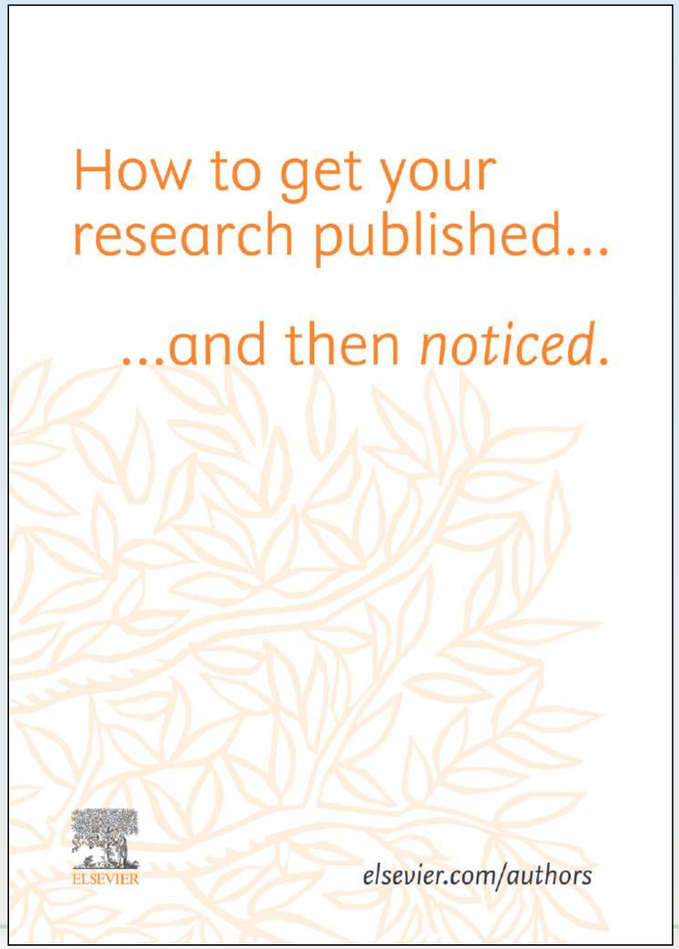






There are also many websites on academic writing: choose them wisely

https://www.elsevier.com/?a=91173



www.sfedit.net

Can I use AI for improving the writing of my paper?

Academic information must be RELIABLE

AI, so far, cannot replace a qualified researcher in the following tasks:

- Identifying meaningful research ideas
- Designing experiments
- Reviewing the scientific literature
- Writing a good Introduction section for a research paper
- Interpreting data

AI is useful for:

- Translating text and improving readability
- Generating images — but be careful: AI-generated images are not always acceptable in scientific publications
- Assisting with literature reviews, although all results must be verified and supplemented by the researcher

Can I use AI for improving the writing of my paper?

Academic information must be RELIABLE

When using AI in academic writing, you must:

- Follow your institution's guidelines, usually provided by the Ethics Department.
  For example, the CSIC has a specific Decalogue.

- Follow the guidelines of the journal to which you are submitting.

Using AI in Academic writing is far from straightforward.
But it is such a powerful tool that you should use it.

Can I use AI for improving the writing of my paper?

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ELSEVIER

Key points

Write direct and short sentences

One piece of information per sentence

Avoid multiple statements in one sentence

Well built paragraphs

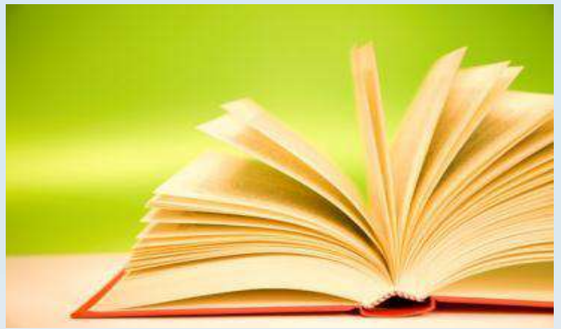
Key points

Present tense:

for known facts & hypotheses

Past tense:

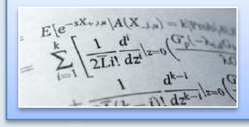
for experiments conducted & results



Key points

Use active voice to shorten sentences

Avoid abbreviations



Minimize use of adverbs

Eliminate redundant phrases

Double-check unfamiliar words or phrases

Academic Writing

1. Preliminary remarks
2. The scientific language
3. Structure of the paper: features of each section
4. Writing the paper

Types of papers

Full research articles

Letters or short communications

Review papers

Types of papers

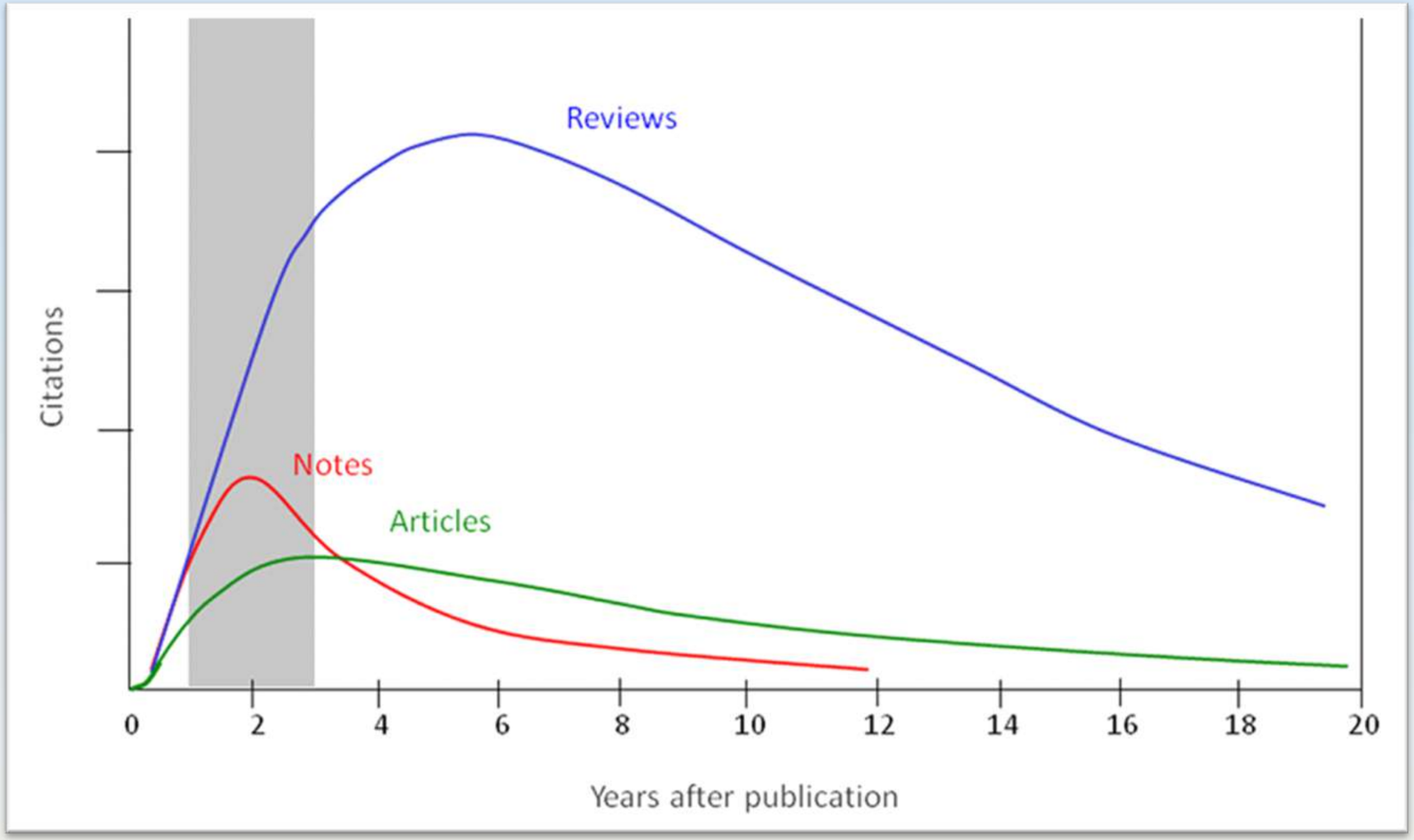
Review papers are considered by many as minor papers. I do not agree:

- A high-quality review article should go beyond summarizing existing literature;
  it should provide deep insights, critical synthesis, and clear perspectives on the field.

- The review would benefit from explicit, insightful, and professional commentaries
  that guides the reader toward understanding the field's current challenges and future directions.

  - A good review paper may imply the reading&analysis of several hundreds of papers
  - Good reviews are very helpful to unexperienced researchers
  - A lot of work… but many citations

Citations per article type



How to arrange a scientific paper

The IMRAD system is the most widely used (*Introduction, Methods, Results And Discussion*).

The American National Standards Institute (1972)

According to the IMRAD system, a scientific paper is arranged as follows:

This does not necessarily apply to a review paper, meeting abstract, conference report…

Title
Authors & affiliations
Abstract
Keywords
Introduction
Materials and Methods
Results
Discussion
Conclusions
Acknowledgements
Reference list
Tables
Legends of the figures
Figures

How to arrange a scientific paper

The paper must be preceded by: *Highlights*

Sometimes included: *List of symbols and abbreviations*
Supplementary Information

Some journals ask for a *Graphical Abstract* (optional)

Take into account:

- Including a *List of symbols and abbreviations* is not compulsory: ask to the Editor, if in doubt.

- Write the *Highlights* with care: they must outline the novelty of your article.

- The *Graphical Abstract* should make your article more appealing to the reader: do not make a boring, plane, graphical abstract.

Highlights

-  Advertise your work
-  3-5 bullet points
-  Key conclusions
-  Use full sentences

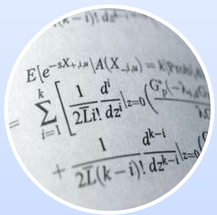
Keep it short. Most journals allows for 1, 1.5 lines per highlight

Title

Fewest possible words

Adequately describes content

Identifies main issue



Does not use rarely-used abbreviations

Effective manuscript titles

Title

It must reflect the content and be short: choose wisely every word

Common errors

Waste words

Studies on…
Investigations on…
Observations on…

Too short ≈ too general

✗ *Action of Antibiotics on Bacteria*
✗ *Action of Streptomycin on Mycobacterium tuberculosis*
✓ *Inhibition of growth of Mycobacterium tuberculosis by Streptomycin*

Too long

As short as possible, although informative and appealing

Too specialized

It must be understood by as many readers as possible, even by beginners

Title

It must reflect the content and be short: choose wisely every word

Common errors

It does not contain key words

It must contain the key words of the studied topic (*climate change, stem cells, transgenic, pesticide…*), with the most important ones at the beginning (easy automatic finding)

It does not show anything new

It must show the novelty of your article. If possible, use '*Novel…*', '*Unexpected…*', '*First…*', '*Proof of…*', '*Evidence for…*', etc.

It includes abbreviations

Do not use abbreviations in a title. It may be acceptable if they are very common (*DNA*, *GMO*…), but it is not recommended.

Title

It must reflect the content and be short: choose wisely every word

Types of titles

Assertive sentence titles

Oct-3 is a maternal factor required for the first mouse embryonic division

Numbered series titles

Studies on Bacteria. II. Cell Wall of Staphylococcus aureus

Hanging titles

Studies on Bacteria: Cell Wall of Staphylococcus aureus

A good title describes adequately the contents of the paper with the fewest possible words.

Authors and addresses

Position of the authors

1 3 4 5 2

Donald SR*, Green FJ, Guron H, Medrano J, Gomez P

* Being the *corresponding author* has some merit

Sometimes the authors are arranged by alphabetic order.
This is not informative to the reader

Two or more authors can be considered as being equally relevant in the authorship of a paper:

Green SR[1]*, Naor A[1], Nadler A, Braun P

'[1] These authors have contributed equally to this work'

IMPORTANT: the order of the authors must be decided at the beginning, to avoid conflicts.
It may be adjusted later on, according to the contribution of each author.

Control of transpiration by radiation

Roland Pieruschka[a,b], Gregor Huber[a], and Joseph A. Berry[b,1]

[a]Forschungszentrum Jülich GmbH, Institut für Chemie und Dynamik der Geosphäre, 52425 Jülich, Germany; and [b]Carnegie Institution of Washington, Department of Global Ecology, Stanford, CA 94305

Edited* by Olle E. Bjorkman, Carnegie Institution of Washington, Stanford, CA, and approved June 16, 2010 (received for review November 13, 2009)

The terrestrial hydrological cycle is strongly influenced by transpiration—water loss through the stomatal pores of leaves. In this report we present studies showing that the energy content of radiation absorbed by the leaf influences stomatal control of transpiration. This observation is at odds with current concepts of how stomata sense and control transpiration, and we suggest an alternative model. Specifically, we argue that the steady-state water potential of the epidermis in the intact leaf is controlled by the difference between the radiation-controlled rate of water vapor production in the leaf interior and the rate of transpiration. Any difference between these two potentially large fluxes is made up by evaporation from (or condensation on) the epidermis, causing its water potential to pivot around this balance point. Previous work established that stomata in isolated epidermal strips respond by opening with increasing (and closing with decreasing) water potential. Thus, stomatal conductance and transpiration rate should increase when there is condensation on (and decrease when there is evaporation from) the epidermis, thus tending to maintain homeostasis of epidermal water potential. We use a model to show that such a mechanism would have control properties similar to those observed with leaves. This hypothesis provides a plausible explanation for the regulation of leaf and canopy transpiration by the radiation load and provides a unique framework for studies of the regulation of stomatal conductance by CO_2 and other factors.

plant physiology | stomata | micrometeorology

Transpiration, evaporation from plant leaves, plays a key role in the energy and water balance of the land surface; it is a key process in the hydrologic cycle, and because photosynthetic uptake of CO_2 and transpiration are both controlled by stomata, it is strongly linked to plant productivity (1). Models that predict transpiration have important applications in many areas including weather forecasting, understanding climate change, hydrology, ecosystem function, and agricultural production.

Although there is a rich history of studies of transpiration, a full description of the mechanisms that control this process still eludes us. This lack is related to the fact that the control of this process is distributed over a large range of scales from atmospheric turbulence to the regulation of ion transporters in the membranes of cells forming the stomatal pore (2) and it falls into the purview of two separate disciplines. Meteorologists have approached the problem from the top down, emphasizing the energy required to support evaporation of water and the physics of water vapor and heat transport between leaf surfaces and the bulk atmosphere. Stomatal conductance is often used as a fixed boundary condition in such models (3), yet we know that plants are constantly adjusting their conductance according to an internal program as the environmental conditions change. Plant physiologists have focused on sensory systems and turgor-dependent movements that control the aperture of stomata and influence the conductance to diffusion of water vapor across the epidermis (4). They are generally more interested in quantifying the impact of conductance on photosynthesis and water use efficiency at the leaf scale than in understanding how conductance relates to the physics of the environment. This gap in our knowledge limits our ability to model the interplay of physics and physiology in the control of transpiration and the surface energy budget (5). Whereas some models exist that can predict conductance, these models are largely empirical or theoretical (6–8). There is currently no quantitative, mechanistic basis for predicting this key parameter. We report here on some observations that have stimulated a reexamination of some ideas that have held sway in this field for years. The key difference is that the exchange of energy and water vapor by a leaf with its environment has been considered as a bulk leaf property. We now consider how these exchanges at the outer surface of the epidermis are linked to processes inside the leaf, and we propose a role for the energy and water balance of the epidermis in controlling the rate of transpiration.

In this paper we distinguish between transpiration, E, which is diffusion of water vapor through stomatal pores to the atmosphere, and evaporation, ξ, which we use here to represent the phase change from liquid water to vapor within a leaf. During steady-state transpiration water that evaporates at one place in the leaf may condense at another (a negative ξ); thus gross evaporation can exceed transpiration. Furthermore, the physical controls on transpiration and evaporation are quite different. Transpiration at the leaf scale into a well stirred gas exchange cuvettete can be viewed as "imposed" (3) by the vapor pressure difference (VPD), which is the difference in mole fraction water vapor between that of the air in the cuvettete and that inside of the pore—assumed to be saturated at the leaf temperature. On the other hand, evaporation inside the leaf occurs into air that is essentially saturated with water vapor. There can be no imposed evaporation in such a system. Nevertheless, evaporation can occur if there is an input of energy increasing the temperature and thereby the latent and sensible heat content of the air (9). This so-called "equilibrium" evaporation is one of the limits of the Penman–Monteith evaporation theory (10). Unlike imposed evaporation (3) where water vapor is *pulled* from a wet surface by a diffusion gradient, in equilibrium evaporation, water vapor is *pushed* into the surrounding air by the input of heat. No system undergoing steady-state transpiration can be fully at equilibrium, but it is an adequate approximation for evaporation inside a leaf. The rate of equilibrium evaporation is given by

$$\xi = \frac{\Delta}{\Delta + \gamma} \times \frac{Q}{\lambda}, \qquad [1]$$

where λ is the latent heat of evaporation of water, Δ is the derivative of the saturation vapor pressure of water with respect to temperature, γ is the psychometric constant, and Q is the available energy. We define a term, $m = \Delta/(\Delta + \gamma)$ to represent the fraction of Q appearing as latent heat; $m = 0.74$ at 25 °C and 0.82 at 35 °C. In meteorological applications, Q = Rn (net radiation) − G (soil heat storage). In the leaf system, heat storage is insignificant, and Q can come from two sources: (a) heat

Author contributions: R.P. and J.A.B. designed research; R.P., G.H., and J.A.B. performed research; R.P., G.H., and J.A.B. analyzed data; and R.P. and J.A.B. wrote the paper.

The authors declare no conflict of interest.

*This Direct Submission article had a prearranged editor.

Freely available online through the PNAS open access option.

[1]To whom correspondence should be addressed. E-mail: jberry@ciw.edu.

This article contains supporting information online at www.pnas.org/lookup/suppl/doi:10.1073/pnas.0913177107/-/DCSupplemental.

In some journals, the contribution of each author is clearly specified.

This is, perhaps, the most advisable method

Author contributions: R.P. and J.A.B. designed research; R.P., G.H., and J.A.B. performed research; R.P., G.H., and J.A.B. analyzed data; and R.P. and J.A.B. wrote the paper.

The authors declare no conflict of interest.

*This Direct Submission article had a prearranged editor.

Freely available online through the PNAS open access option.

[1]To whom correspondence should be addressed. E-mail: jberry@ciw.edu.

This article contains supporting information online at www.pnas.org/lookup/suppl/doi:10.1073/pnas.0913177107/-/DCSupplemental.

Authors and addresses

¿Who can be author of a paper?

The researches whose intellectual contribution to the paper has been **relevant**.

The *laundry list* strategy (including everyone who has participated) is not acceptable.

Papers with many authors are justified only if the work has been made by several groups.

Technicians who carry out work designed by a researcher should not be listed as authors. Exceptions may apply — for example, when a technician designs and builds an apparatus that is essential for the experiments.

People who has contributed to the article, and are not in the list of authors, must be included in the Acknowledgements.

Authors and addresses

Choose with care your name of author:

- Coincidences with other authors must be avoided. Check it through the Internet

This will facilitate citations, finding procedures by automatic devices, *h* index, etc.

There are many possible variations of my name, but my author name must be always the same:

J.E. Fernández J.E. Fernandez J.E. Fernández-Luque J.E. Fernandez-Luque

E. Fernández E. Fernandez E. Fernández-Luque E. Fernandez-Luque

Authors and addresses

Address Write your address always in the same way. Do not forget to mention your institution:

Instituto de Recursos Naturales y Agrobiología de Sevilla (IRNAS, CSIC)
Avenida de la Reina Mercedes, n.º 10
41012-Sevilla, Spain

Corresponding author: jefer@irnase.csic.es (Dr. J.E. Fernández)
Phone: +34 954 62 47 11

Avoid variations of your address: they confuse both readers and automatic finding devices.

Instituto de Recursos Naturales y Agrobiología (IRNAS-CSIC)
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41012-Sevilla, Spain

Instituto de Recursos Naturales y Agrobiología de Sevilla (IRNAS, CSIC)
Avd. Reina Mercedes, 10
41012-Sevilla, Spain

Abstract

This is the advertisement of your article. Make it interesting and understandable

Make it accurate and specific

A clear abstract will strongly influence whether or not your work is considered

Keep it as brief as possible

See the Guide for Authors. In between 200 and 300 words

Abstract

It is the most read part of the paper, after the title: write it with care!

Abstract

A good Abstract invites to read the paper. A bad Abstract invites to stop reading.

Remember:

- It must be a summary of ALL sections of the paper.
- No more than 250 palabras (or less, depending on the journal): choose them wisely
- One single paragraph.
- When including references, these must be detailed: the *Abstract* is an independent unit, a publication in itself.

Steppe et al., 2009, J Exp Bot 45:138-144

- Avoid technical names and abbreviations (except if repeated in the Abstract)
- *Past tense* (it refers to the work done).

Abstract

It is the most read part of the paper, after the title: write it with care!

Structure of the Abstract (conventional format)

Background *Issues* *Problem* *Hypothesis* **30%** **3-4 *sentences***	*Experiments* **20%** **3 *sentences***	*Main findings* *Meaning* *Novelty* *Implications* **50%** **6-7 *sentences***

Source: *Scientific Writing for Impact Factor Journals*. Eric Lichtfouse, 2013.

After writing the *Abstract*, read it several times, on different days, and delete all waste words

Abstract

It is the most read part of the paper, after the title: write it with care!

The *structured* Abstract

In this case the Abstract is structured in sections, similarly to the paper:

Background

Method

Results

Conclusion

The same rules of being clear, concise, appealing, etc., applies here.

Keywords

Used by indexing and abstracting services

Are the labels of the manuscript

Use only established abbreviations e.g. DNA

Do not repeat words in the title

Introduction

You should have here a 'hook' to gain the reader's attention:
Why did you choose that subject and why it is important?

Remember:

- Describe the nature and relevance of the problem
  - WHY have you made the work
  - WHAT IS KNOWN? Mention key references
  - GAPS IN KNOWLEDGE. Outline what have you studied
- Mention the HIPOTHESIS (advisable, not compulsory)
- Finish with the OBJECTIVES of he work.
- *Present tense* (you are describing the current situation) except, perhaps, when mentioning the work already made.

  Instead of *Production increases with irrigation (Naor, 2006)*

  you can say *Naor (2006) reported that production increased with irrigation*

Introduction

You should have here a 'hook' to gain the reader's attention:
Why did you choose that subject and why it is important?

- Include here the definitions, symbols and abbreviations used in the paper.
- Do not give more than 2-3 references for each item, except in reviews
- When describing the problem (first part of the *Introduction*), go from the general to the specific: from the general aspects of the problem to those considered in the paper.
- The *Introduction* should not be too long.

Average paper on Agronomy

Title & authors	Ab.	Introduction	M & M	Results	Discussion	C.	Ack. & Ref.
				3 - 3.5			
1	0.5	1.5 - 2	2 - 2.5	(It can be shorter Than M & M)	4 - 5	0.5	2

Tables (2-3) & Figures (6-7)

Introduction

Abbreviations

The *Introduction* is the section in which abbreviations can be included for the first time.

Neither the *Title* nor the *Abstract* must include abbreviations.

Abbreviations, however, should be avoided, if possible.

You can use symbols of the variables (those recommended by *Le Système International D'Unités*, SI), or similar.

You can also use acronyms widely accepted by the scientific community, e.g. DNA for desoxirribonucleic acir or GMO for genetically modified organism.

But sentences such as…

Plant production in NPK and FYM addition was significantly improved in DRI

… will make the article difficult and tyring to read

Help the reader!

Introduction

Important:

- The novelty of the paper must be suggested in this section

- This section shouldn't be a history lesson but you have to introduce the main scientific publications on which your work is based. Cite a couple of original and important works, including recent review articles, to give the reader a sense of how your work fits into the literature.

- Provide a perspective that is consistent with the journal where you are submitting

Materials and methods

Describe the experimental design with enough detail,
so that a colleague can repeat the experiments.

Remember:

- The experiments must be described in chronological order.
- Do not use commercial names if the generic ones are descriptive enough.
- If the method you have used is already published, do not describe it, just give the reference.
- The principles of clarity, rigour and precision apply to this section more than to any other.
- Do not include results in this section: that is a common error that must be avoided.
- *Past tense* (you are explaining something that has already been made).

Materials and methods

Describe the experimental design with enough detail,
so that a colleague can repeat the experiments.

- Use subsections for better arrangement of the provided information

  The orchard
  Measurements
  Statistical analysis

- Explain clearly both the experimental design and the statistical analysis of the data.
  They both are crucial for the reader to evaluate the reliability of the experiments.

Results

Be clear & easy to understand

Highlight the main findings

Feature unexpected findings

Provide proper statistical analysis

Include clear illustrations & figures

Results

Describe, in a concise and clear way, your results on something unknown until know.

Remember:

- Do not include here part of the *Materials and methods.*
- The negative results are also important: mention them but without too much stress, to avoid distorting the main message.
- Do not repeat in the text what you show in *Tables* and *Figures*.
- Be clear and concise when referring in the text to what is already shown in *Tables* and *Figures*:

Instead of *It is clearly shown in Table 1 that irrigation increased yield*,
say *Irrigation increased yield (Table 1).*

Results

Describe, in a concise and clear way, your results on something unknown until know.

Remember:

- Do not show all your results: show just the most relevant for the purpose of your work.

  In a Ph.D. Thesis or similar, you can show more results than in a scientific paper.
  In the latter, show new results, on something unknown.

- Use subsections if required for fluency and clarity.

- Main results must be displayed in *Tables* and *Figures*. Less relevant results can be given in the text, or not given at all.

- *Past tense* (you describe what you have obtained).

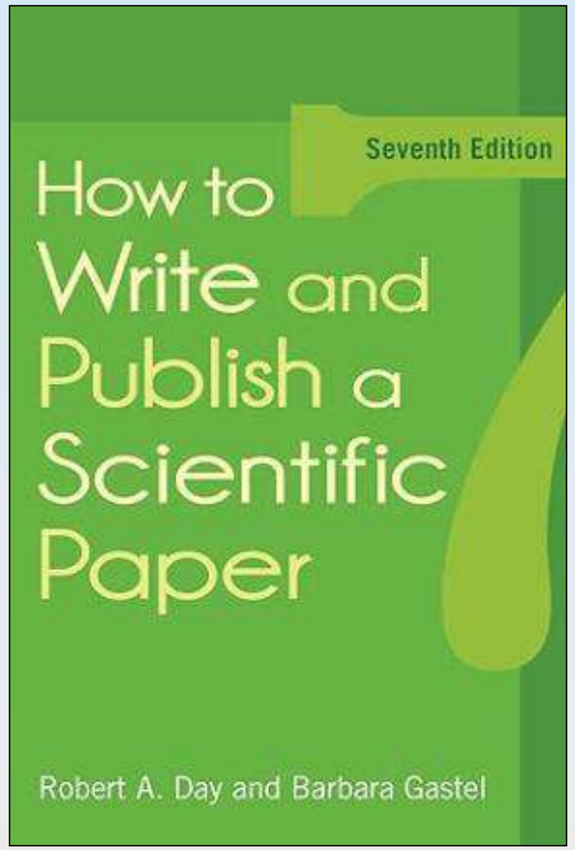
Results

Describe, in a concise and clear way, your results on something unknown until know.

Chapter 13. How to Design Effective Tables

Chapter 14. How to Prepare Effective Graphs

Chapter 15. How to Prepare Effective Photographs



Discussion

Most important section!

What do the results mean?

Make the discussion correspond to the results

Compare your own results with published work

What is the 'bigger picture'?

Go beyond your results

1. This is where you get the chance to SELL your data! A huge number of manuscripts are rejected because the Discussion is weak or only includes mere description of the results.

2. Make sure the Discussion corresponds to and compliments the results, but do not simply repeat the results here.

3. Compare other published results with your own, And DO NOT ignore work in disagreement with yours – confront it and convince the reader that you are correct or better.

Showing Results and Discussion in two separared sections is better tan using a single "Results and Discussion" section

Discussion

Most important section!

What do the results mean?

Make the discussion correspond to the results

Compare your own results with published work

What is the ‘bigger picture’?

Go beyond your results

Be careful with the following aspects:

- Going beyond the limits supported by your findings when drawing the ‘bigger picture’.
- Avoid non-specific expressions such as “higher temperature” or “at a lower rate”; use quantitative descriptions instead.
- Do not use here new terms not already defined or mentioned in your paper.
- Speculations on possible interpretations are allowed, but these should be carefully explained and rooted in facts, rather than imagination.

Discussion

You must interpret your results and identify what they provide to the current knowledge.
It is the hardest section to write.

Remember:

- Write it with extreme care: the paper will be bad if the results, even if excellent, are not properly discussed.
- The main purpose of this section is to explain the meaning of your results: stick to your results and avoid speculation.
- Relate the meaning of your results with published findings: to do so, you must do first a good literature review. This is crucial.
- After finishing writing the *Discussion*, assume that is too long and verbose: rewrite for fluency, concision and clarity.

"Occasionally, I recognize what I call the squid technique: the author is doubtful about his facts or his reasoning and retreats behind a protective cloud of ink" D. Savile, *Tableau*, Sep 1972

Discussion

You must interpret your results and identify what they provide to the current knowledge.
It is the hardest section to write.

Features of a good *Discussion*: (After B. Gastel and R. Day, How to Write and Publish a Scientific Paper, 8th ed., Cambridge U.P., 2017)

- You discuss, you do not recapitulate, the results: present the principles, relationships, and generalizations shown by the results.
- Point out any exceptions or any lack of correlation and define unsettled points: do not cover up or fudge data that do not quite fit.
- Show how your results and interpretations agree, or contrast, with previously published work.
- Discuss the theoretical implications, and practical applications, of your work.
- State your conclusions as clearly as possible.
- Summarize your evidence for *each* conclusion.

Discussion

You must interpret your results and identify what they provide to the current knowledge.
It is the hardest section to write.

Remember:

- Your interpretation of the results must agree with the *hypothesis* and *objectives*, and with the *Title* of the paper.

  If your initial hypothesis is not supported by the results, you should reconsider both the hypothesis and how you have focused the paper. You can mention these changes in your paper, or not. But, in the end, your hypothesis must be fully supported by your results and these must provide a satisfactory response to the objectives of the paper.

- The novelty of your work must be clearly outlined in this section.

  Use wisely the literature: compare your results with previously published findings.
  Be honest: do not disregard papers against your results. Expert readers will realize that you have deliverately omitted them, which will discredit you.

Discussion

You must interpret your results and identify what they provide to the current knowledge.
It is the hardest section to write.

Remember:

- The reader should clearly differentiate between your results and those published by other authors.

  - Use the active voice: *I…, we…, our results…., this study…*
  - Locate references properly: if in the wrong place, the reader will not know who published the results you are commenting on.

- Each subsection must finish with a conclusion, or conclusions, on the discussed results.

  Summarise, in one or two sentences, the novelty of the findings, their implications and applications.

Each novel result of the article (the conclusions) must be written with care and repeated three times: here, in the *Abstract* and in the *Conclusions*.

Conclusions

Write it with care: it is one of the first sections to be read

Remember:

- Write them in a section different from the *Discussion*.
- Do not conclude what it is already known. Focus on the novelty of your work.
- Both the *Title* and the *objectives* must agree with the *Conclusions*. If these are poor, do not use an ambitious title and objectives.
- Explain the implications and benefits of your work. Each scientific paper must have implications, that you must outline. If this is too long, include it in the *Discussion* section.
- Do not repeat the *Abstract*. Focus on the conclusions and their potential impact.
- Be concise and to the point. Interesting aspects must be developed in the *Discussion*.
- Do not include references, except if you have a good reason for it.

Conclusions

Write it with care: it is one of the first sections to be read

Structure of the *Conclusions*

The problem (summarized)	*Main findings, outlining the following:*
	Interpretation
	What they contribute to existing knowledge
	Implications and benefits
	A look forward
20%	**80%**

Source: *Scientific Writing for Impact Factor Journals*. Eric Lichtfouse, 2013.

Both the *Abstract* and the *Conclusions* must be written with extreme care: they must both reflect our findings with precision and be appealing to the reader.
Read these two sections several times, on different days, and 'polish' them as much as you can.

Acknowledgements

Acknowledgements

- Do not forget to thank the institution which funded the work: give the reference of the project, grant, contract or whatever.

- You must mention here any collaborator who is not co-author.

- If you say *I wish to thank Paul Jones*, it may look like "I would like to thank him, but his help has not been so important". Better say *I thank Paul Jones*.

- Check the details:

  The company *Internacional Olivarera, S.A.U.*, is also known as *Interoliva*.
  Ask the owner which name to use.

- Be cautious! If your colleague's input is too broadly stated, he or she may be bound to defend the paper.

Acknowledgements

Disclosing the use of AI

In the Acknowledgements?

"The authors acknowledge the use of ChatGPT-5 (OpenAI) for improving English fluency, preliminary draft editing, and formatting of data. The scientific content, study design and data analyses presented in this article were entirely conceived, validated, and approved by the authors."

Close to the 'Authors contributions'?

Acknowledgements

Disclosing the use

In the Acknow

“The authors
preliminary dr
analyses prese

uency,
gn and data
by the authors.”

Close to the ‘A

Acknowledgements

This study was supported by the National Key Research and Development Program (2023YFC3503804); the Earmarked Fund for CARS-21; Project of Hubei Province Traditional Chinese Medicine Innovation Team (ZY2025J002).

Author contributions

Conceptualization and methodology: Qiaohuan Chen, Dahui Liu and Yuhuan Miao; Investigation: Qiaohuan Chen, Xiao Wang and Jiao Fu; Data analysis and Formal analysis: Qiaohuan Chen, Jinxin Li, Manping Gao; Validation and Visualization: Qiaohuan Chen; Supervision: Dahui Liu and Yuhuan Miao; Project administration: Dahui Liu and Yuhuan Miao; Funding acquisition: Dahui Liu; Writing–original draft: Qiaohuan Chen; Writing–review and editing: Qiaohuan Chen, Dahui Liu, Yuhuan Miao, Ling Gong and Waseem Mushtaq.

List of references

- Do not use too many references
- Always ensure you have fully absorbed material you are referencing
- Use published work – not grey literature
- Avoid excessive self-citations
- Avoid excessive citations of publications from the same region/country
- Conform strictly to the style in the guide for authors or 'Your Paper Your Way'

Remember:

- Follow the *Guide for Authors* of the journal: all references must be in the correct format.
- Check for any reference cited in the text being in the list, and vice versa.

"Imagine if contributors could submit their papers to a journal without worrying about formatting the manuscript, including those pesky references, to exacting specifications? Well that's precisely what we at *Free Radical Biology & Medicine* have invited authors to do. Since July of 2011, we have encouraged contributors to submit 'Your Paper, Your Way.' "

Academic Writing

1. Preliminary remarks
2. The scientific language
3. Structure of the paper: features of each section
4. Writing the paper

Suggestions to follow

- Write your first paper as soon as possible, from the beginning of your Ph. D. Thesis
  If you do not have interesting results yet, try writing a review paper (you must know the literature on the topic of your research from the beginning of your career).

- To write a scientific paper is difficult. Train yourself.
  Read manuals, take courses, consult experienced researchers, study how good papers are written.

- The rejection rate in most journals is above 70 %
  Do not be disappointed if your first papers are rejected

- I am sure you are anxious to publish your first paper, but never ever submit a paper before being fully finished.
  Do not annoy the editor and reviewers

Suggestions to follow

- Check the English! Hire a professional editor if necessary. Never submit a poorly written paper.
  The average cost of a scientific paper in Agricultural Sciences is 30.000 €.
  To have a standard scientific paper reviewed by a professional editor cost 300-500 €
  Is it worthy?
  American Journal Experts and Edanz: edanzediting.com
  European Association of Science Editors: eaze.org.uk

- Follow the *Guide for Authors* of the chosen journal.
  If you use a 'free style' you may annoy the editor and reviewers

- To bare in mind: Despite taking 4-5 hours of hard work to review a paper, the reviewers are not paid for their job and they receive no recognition:

Make their work easy!

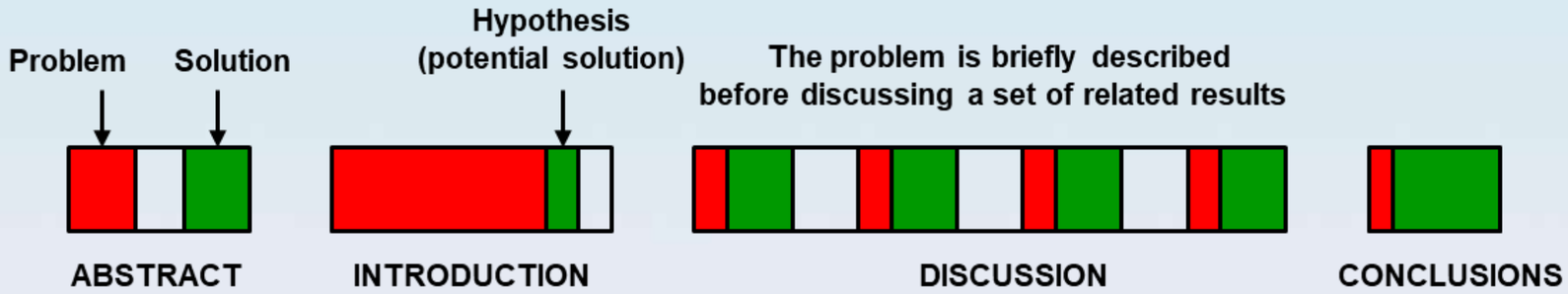
Suggestions to follow

- Outline the novelty of your paper.

  This has to be done three times, at least: in the *Abstract*, the *Discussion* and the *Conclusions*.

  And perhaps in the *Title*.

  Try to contrast the problem with the solution: this adds clarity and highlights what is new in the paper.



Source: *Scientific Writing for Impact Factor Journals*. Eric Lichtfouse, 2013.

- Outline also the implications of your findings

  Extent at which your paper contributes to our understanding of the problem and potential impact of your findings in the industry.

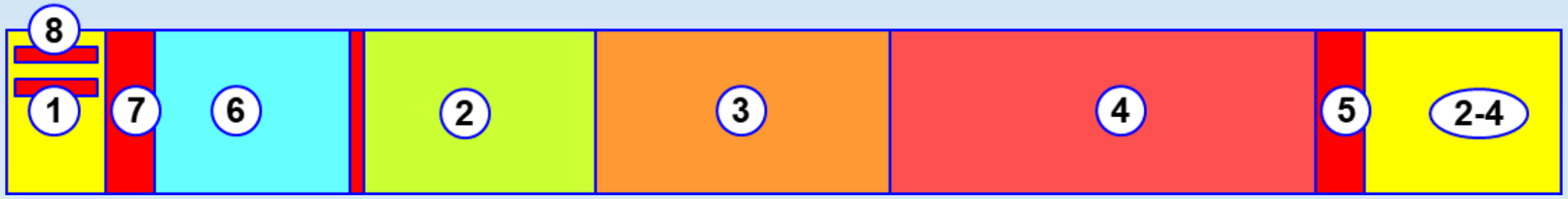
In which order should you write your article?

Title Affil.	Ab.	Introduction	M y M	Results	Discussion	C.	Ack. & Ref.
1	0.5	1.5 - 2	2 - 2.5	3 - 3.5	4 - 5	0.5	2

1. List of authors
2. Title, Hypothesis and Objectives (Draft) & a scheme of the content
3. The M&M section can be written from the beginning
   (It is not going to change. Do not forget to take notes of everything during the experiments)
4. Results (figures and tables, with legends)
5. Discussion
6. Conclusions
7. Introduction & objectives
8. Abstract (and confirm the Title)

- After finishing the paper, work on something else.
- Read it again a few days later.
- In the meantime, invite a colleague to read the paper
- Made the required changes
- Submit the paper

The writer's Block

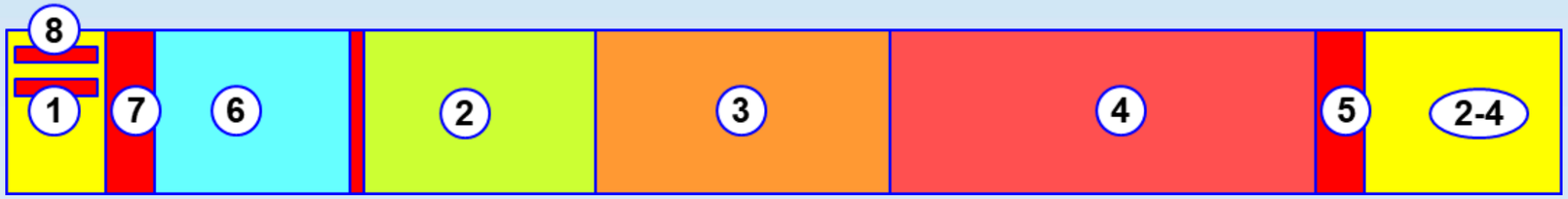


The explained method can be difficult to beginners.

Actually, it may have negative consequences:

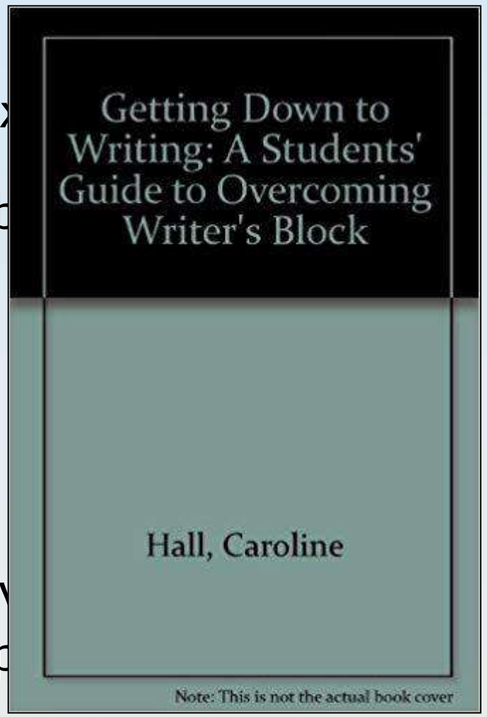
- Increasing fear to write
- Becoming too exigent with oneself
- Loosing confidence on our own writing skills

The writer's Block



If these negative consequences appear, try something else:

- Start writing, it does not matter the section or the quality of the resulting tex
- Do not stop writing even if the information is not properly arranged, or it is b write, later on you will have time to 'polish' the text.
- Try to finish one section before starting another one.
- After having a complete draft, work on something else.
- A few days after, work again on the paper. Repeat these steps, and the prev as many times as required for having a satisfactory, fully polished manuscrip



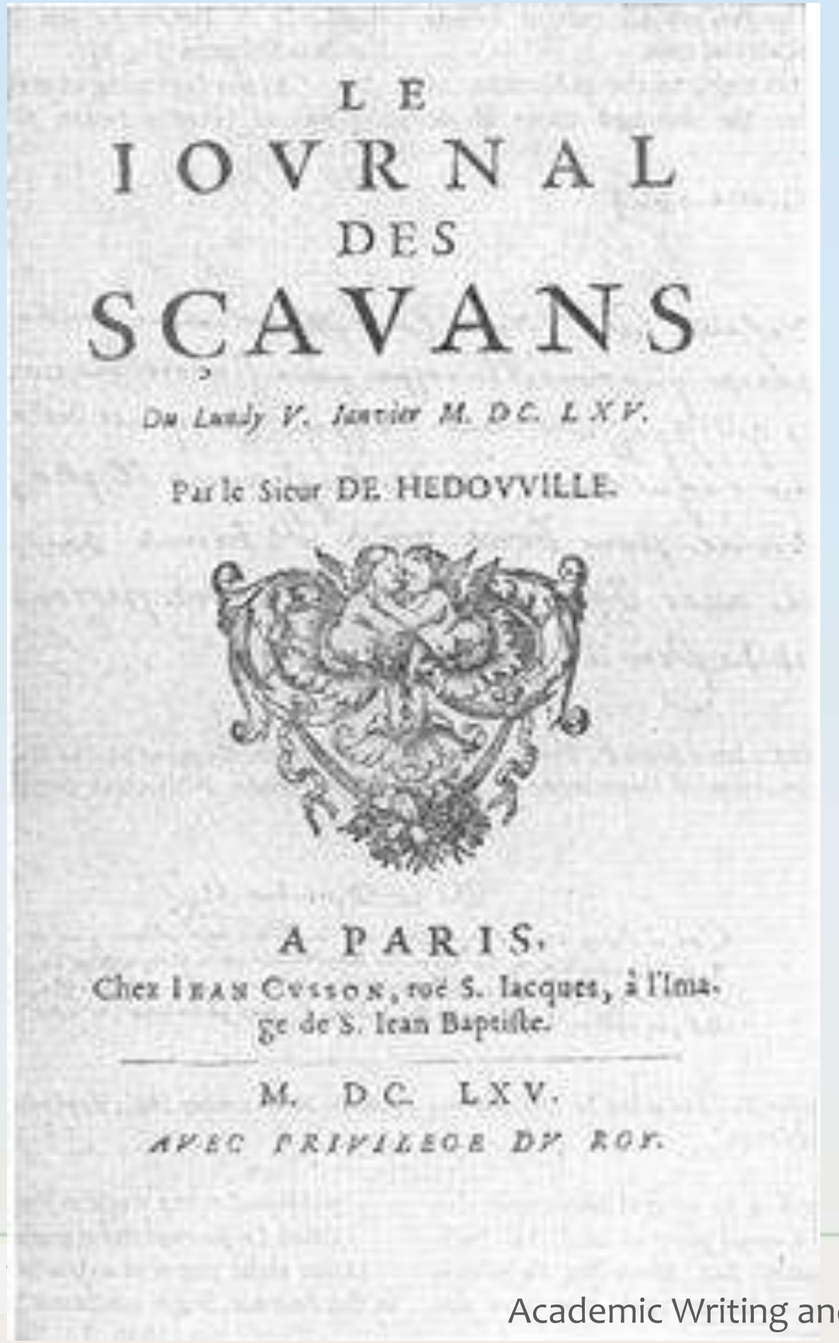
Common mistakes

- The Title does not reflect the content of the paper.
- The Abstract is badly structured: a poor abstract will disappoint the reader, which risks the potential impact of your article.
- Poor Introduction: no description of the issues, the knowledge gap and the problem to be solved.
- References: too many, badly placed, lack of key ones, the original ones are not mentioned…
- The M&M is confusing and with relevant details missing.
- Results are not supported by statistics.
- Too many results are provided, with irrelevant comments.
- It is not clear which results are from the authors' work and which taken from the literature.
- The findings do not answer the Objectives.
- It is not clear whether the hypothesis is correct.

Common mistakes

- The article is not properly focused: the message to the reader is not clear.
- Too much speculation in the Discussion.
- The novelty of the paper is not clear: what the study's findings add to existing knowledge?
- The Conclusions are not supported by the results.
- The education and dissemination aspects are not addressed: the implications and benefits of the findings are not explained.
- The paper is badly arranged, with format errors and poor English.

After *Scientific Writing for Impact Factor Journals*. Eric Lichtfouse. Nova Science Publishers, 2013



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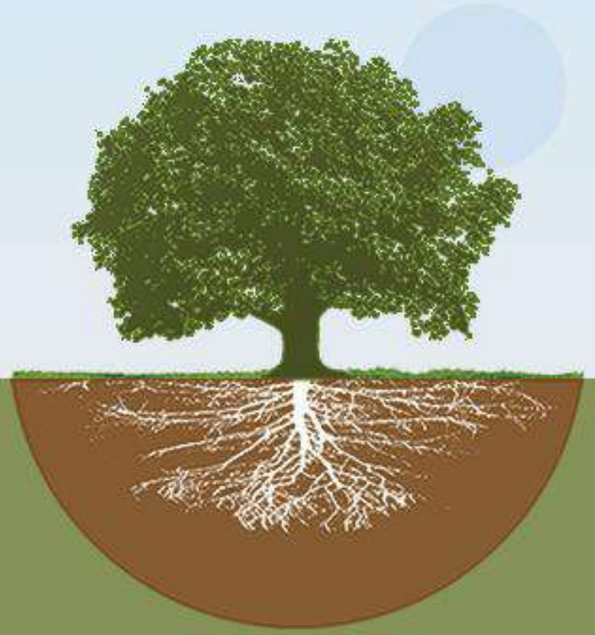
Thank you!

Le Journal des Sçavans was the first scientific journal published in Europe (from January 1st, 1665).

Writing Scientific Papers: examples

J.E. (Enrique) Fernández



Terra vita est

IRNAS

Instituto de Recursos Naturales y Agrobiología de Sevilla

Key points

Write direct and short sentences

One piece of information per sentence

Avoid multiple statements in one sentence

Well built paragraphs

A variety of drought indicators have been proposed by the scientific community for the detection of agricultural drought based on different environmental variables. Climate-based indices, such as the Standardized Precipitation Index (SPI)(Mohammed et al., 2024), Palmer Drought Severity Index (PDSI) (Huang et al., 2023), and Standardized Precipitation Evapotranspiration Index (SPEI)(Sun et al., 2025; Wang et al., 2022), are widely used due to their simplicity and reliance on readily available meteorological data. These indices are effective for identifying meteorological drought and can provide timely information over large areas. However, they may not fully capture the impact of drought on crops, as they do not account for soil moisture or vegetation responses. Vegetation-based indices, such as the Vegetation Condition Index (VCI)(Ghobadi and Badehian, 2025) and Vegetation Health Index (VHI) (Mustapha and Zineddine, 2024), utilize remote sensing data to assess the condition of vegetation. These indices are valuable for detecting the effects of drought on plant health and agricultural productivity. They can reflect the actual response of vegetation to water stress, making them particularly relevant for agricultural drought assessment. Nevertheless, their accuracy can be influenced by factors unrelated to drought, such as disease, pest infestations, or land management practices. Soil moisture-based indices, including the Soil Moisture Index (SMI)(Hunt et al., 2009), Soil Moisture Deficit Index (SMDI)(Martínez-Fernández et al., 2015), and Standardized Soil Moisture Index (SSMI)(Lin et al., 2023), directly measure the availability of water in the soil, which is crucial for crop growth. These indices provide a more direct assessment of agricultural drought, as soil moisture is closely linked to plant water availability. The SMI and SMDI incorporate the influence of soil properties on water deficit by evaluating soil available water, but accurately acquiring soil attribute parameters across diverse regions poses significant challenges for regional agricultural drought monitoring, which limits its application at larger scales. The SSMI could measure soil moisture deviates from the historical mean soil moisture, and thus identifies droughts as statistical outliers in the time series. It could be calculated conveniently based on historical soil moisture time series, and can monitor agricultural drought on multiple time scales (e.g., from days to the centurial time scale). Furthermore, remote sensing and surface/hydrological models provide high spatial and temporal resolution soil moisture data, which can be used to detect large-scale and long-term agricultural droughts(Cao et al., 2022). Thus, in this study, the GLEAM root zone soil moisture data were used to calculate the daily-scale SSMI to analyze agricultural drought conditions during various growth stages of winter wheat.

This study aimed at the Huang-Huai-Hai Plain (HHHP) and used the daily-scale Standardized Soil Moisture Index (SSMI) to assess the characteristics of drought during the growth stages of winter wheat. The main contents include four aspects: (1) spatiotemporal characterization of drought events from a single-attribute perspective; (2) combined-attribute spatiotemporal characteristics of drought events; (3) spatiotemporal patterns of drought occurrences at different levels; and (4) attribution of the underlying drivers governing drought distribution and change.

2. Study area

Key points

(**Seckler et al., 1998; Rosegrant et al., 2002; Boretti & Rosa, 2019; Bondesan et al., 2023**). This growing demand underscores the importance of aligning agricultural practices with SDG 6.4, which seeks to increase WUE across all sectors and address water scarcity substantially (**United Nations General Assembly, 2015**). India faces significant challenges in this context, as absolute water scarcity already affects a substantial portion of the population. With population growth driving higher demand across all water-consuming sectors, the proportion of water scarcity is expected to rise (**CWC, 2020**). Agriculture, the largest water-consuming sector, makes India one of the world's leading irrigating nations (**IEA, 2021**). However, concerns persist regarding the underutilization of irrigation potential, which leads to low WUE, reduced crop productivity, and associated challenges. Addressing these issues through efficient water management practices is critical for achieving SDG 6.4 and ensuring sustainable agricultural development.

With the growing awareness of water conservation, studies have been carried out to estimate the percentage of water losses in each part of the canal distribution system. At present, the average project efficiency of several canal irrigation projects in the rice growing areas in the world has been estimated to be 23% and that of non-paddy crops to be 40 % (**Walters and Boss, 1989; Kinzli et al., 2010; Mohammadi et al., 2019**). In India, the areas irrigated by surface application methods, such as check basins, border strips, furrows, etc., have lower application efficiencies, i.e., only about 25 to 40 percent (**CWC, 2010; Rajput et al. 2016**). Surface application methods are frequently ill-suited to stream size, soil type, or slope, leading to suboptimal performance and inefficiencies. To address these challenges, adopting efficient irrigation practices is essential for minimizing water losses and enhancing agricultural productivity. Various demand management strategies in India have been implemented in the irrigation sector to improve WUE (**Vaidyanathan, 1998; Dhawan, 2002**). Despite these efforts, their overall impact on achieving substantial efficiency improvements has been modest, indicating the need for more effective and tailored approaches.

In general, many farmer's in India irrigate their crops without adhering to proper irrigation scheduling criteria (**George et al., 2000; Lakhiar et al., 2024**), which leads to various unfavorable consequences. Excessive irrigation water usage contributes to water logging, wastage of valuable water resources, plant diseases, and soil salinity; conversely, inadequate water supply results in crop water stress. Farmers continue to employ traditional methods based on assumptions about the crop's water requirements, and farming practices have not evolved significantly over time (**Gsangaya et al., 2020**). To meet future demands while minimizing water usage, farmers must adopt precise irrigation scheduling techniques through smart micro-irrigation systems (**Kim et al., 2008**). Advanced irrigation techniques are vital for efficient water management, enabling higher yields and sustainable farming (**Krishnan et al., 2022**). These methods boost productivity, optimize water use, minimize waste, and promote sustainable, equitable resource management across sectors.

The adoption of the micro-irrigation system has been predominantly observed in areas dependent on groundwater resources (**Bhamoriya and Mathew, 2014**, **Suresh et al., 2019**). Since India is suffering from severe groundwater loss due to fluctuations in precipitation and other anthropogenic effects (**Goldin, 2016; Dangar et al., 2021**), there is immense pressure on already declining groundwater reserves. This increasing trend in the decline of groundwater levels in the majority of Indian districts (**Bhattarai et al., 2021; Sahoo et al., 2021; Swain et al., 2022**) has opened a window for research work on improving water use efficiency in existing old surface irrigation systems. The Upper Ganga Canal (UGC), India's oldest irrigation system, is characterized by poor irrigation performance, with overall water use efficiency in the command area ranging from 33 to 38% (**Kaushal, 2011**). Improving WUE in canal irrigation systems is imperative for the sustainability of agriculture in India.

Key points

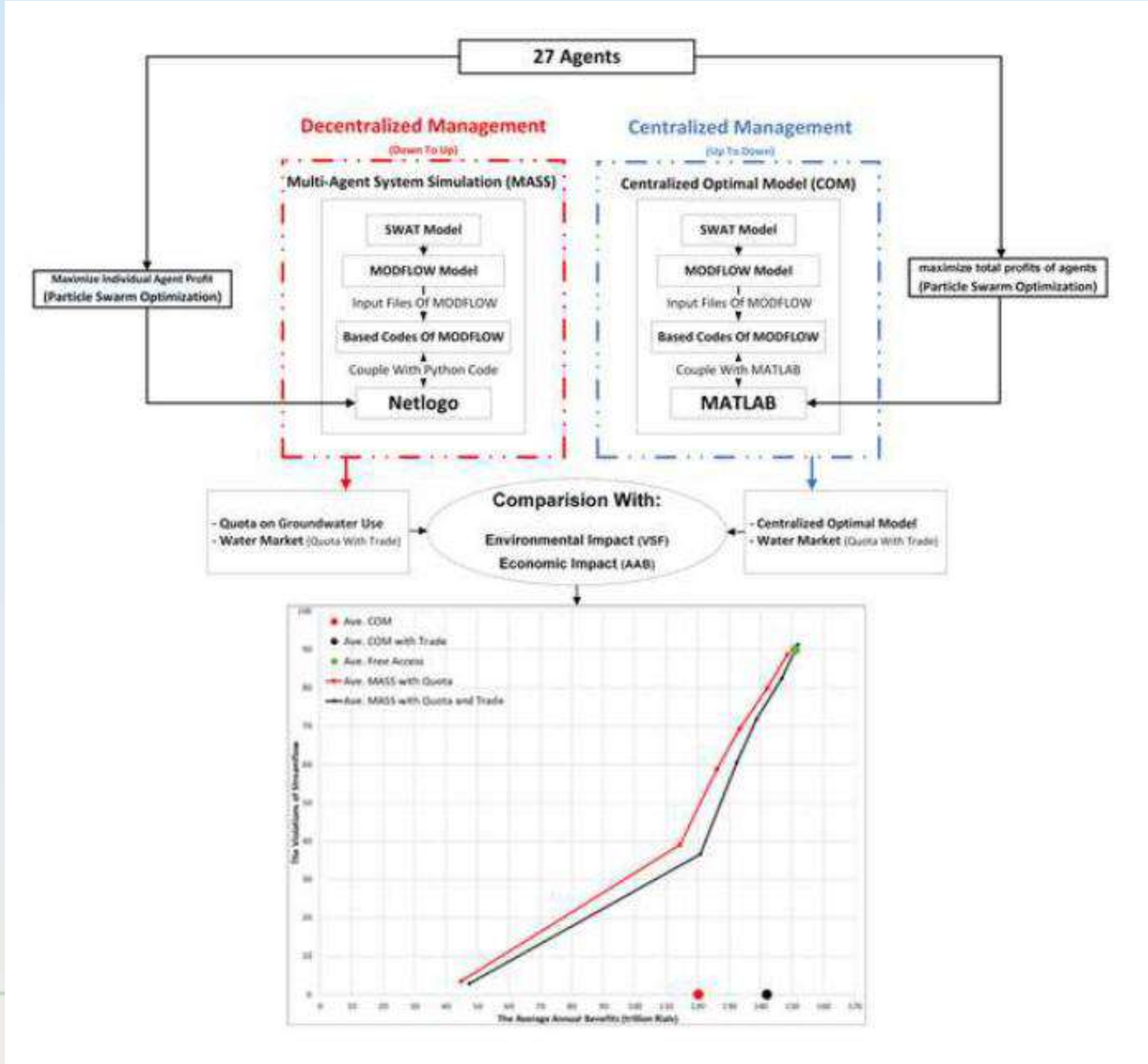
3 Results

3.1 GY and WP

The results of the three-year experiment showed that GM incorporation with N reduction had obvious advantages in improving wheat GY and WP (Fig.3). Regarding mean GY and WP, the GM incorporation with N reduction treatments increased by 11.4%-28.1% and 10.8%-22.7% compared with N100, respectively, and M3N85 showed the most significant improvement, which could be used as a reasonable mode to alleviate the contradiction between high agricultural yield and water scarcity in arid irrigation areas.

Do not use abbreviations in the titles of sections and subsections

Graphical Abstract



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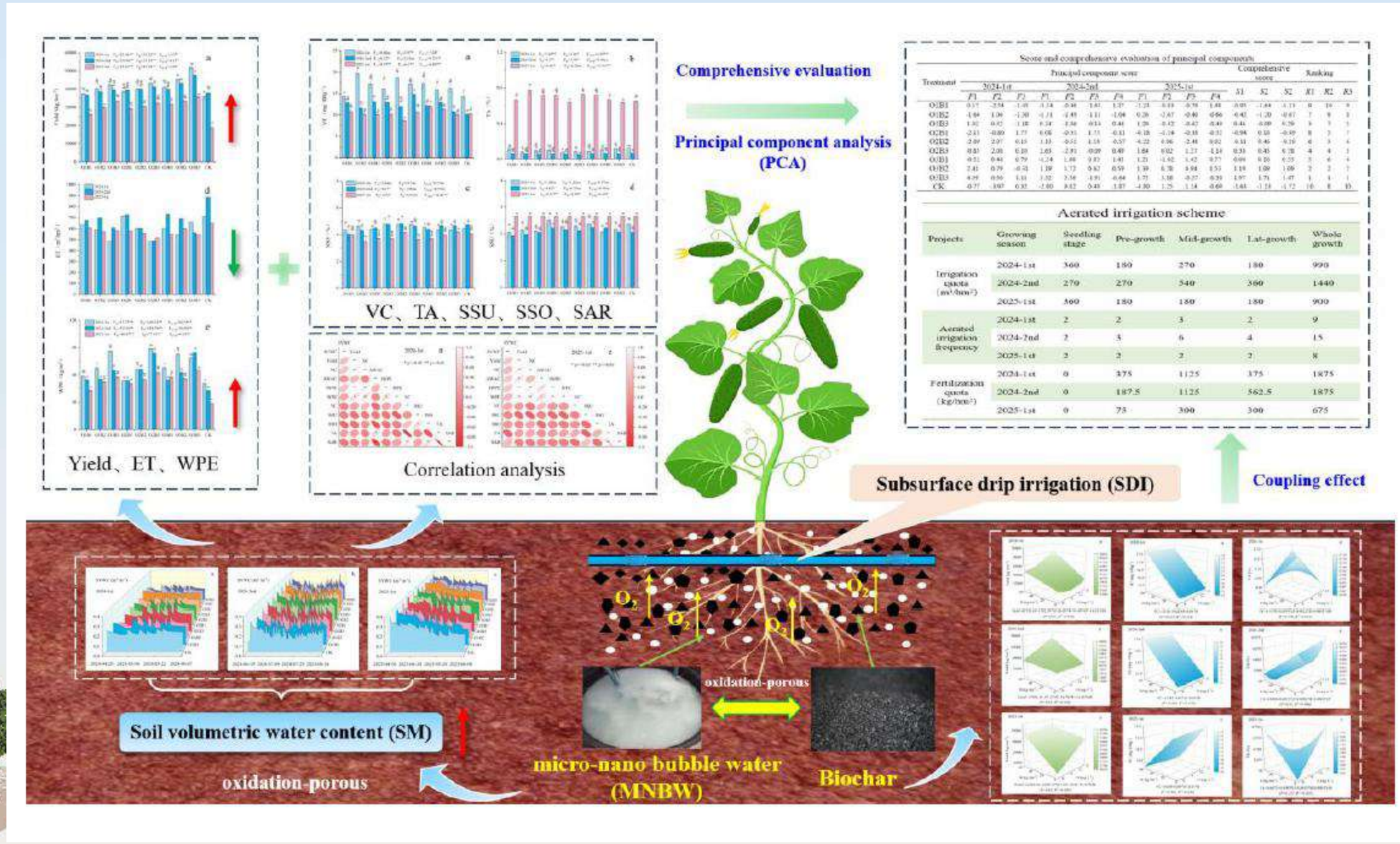
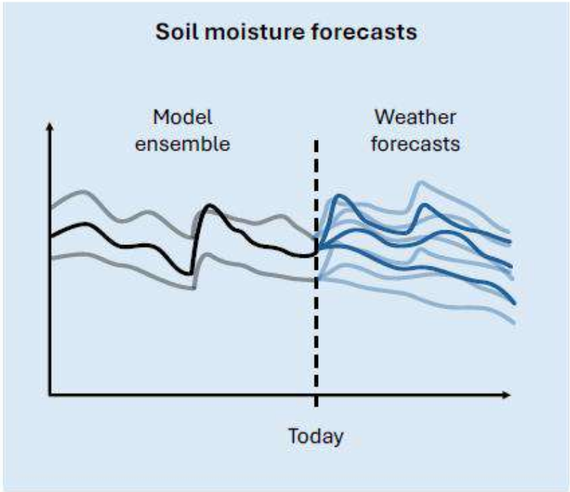


Graphical Abstract

Graphical Abstract

Real-time irrigation scheduling based on probabilistic site-specific soil moisture predictions with SWIM²: A case study in Flanders

Marit G. A. Hendrickx, Pieter Janssens, Jan Vanderborght, Evi Matthyssen, Anne Waverijn, Sander Bombeke, Jan Diels



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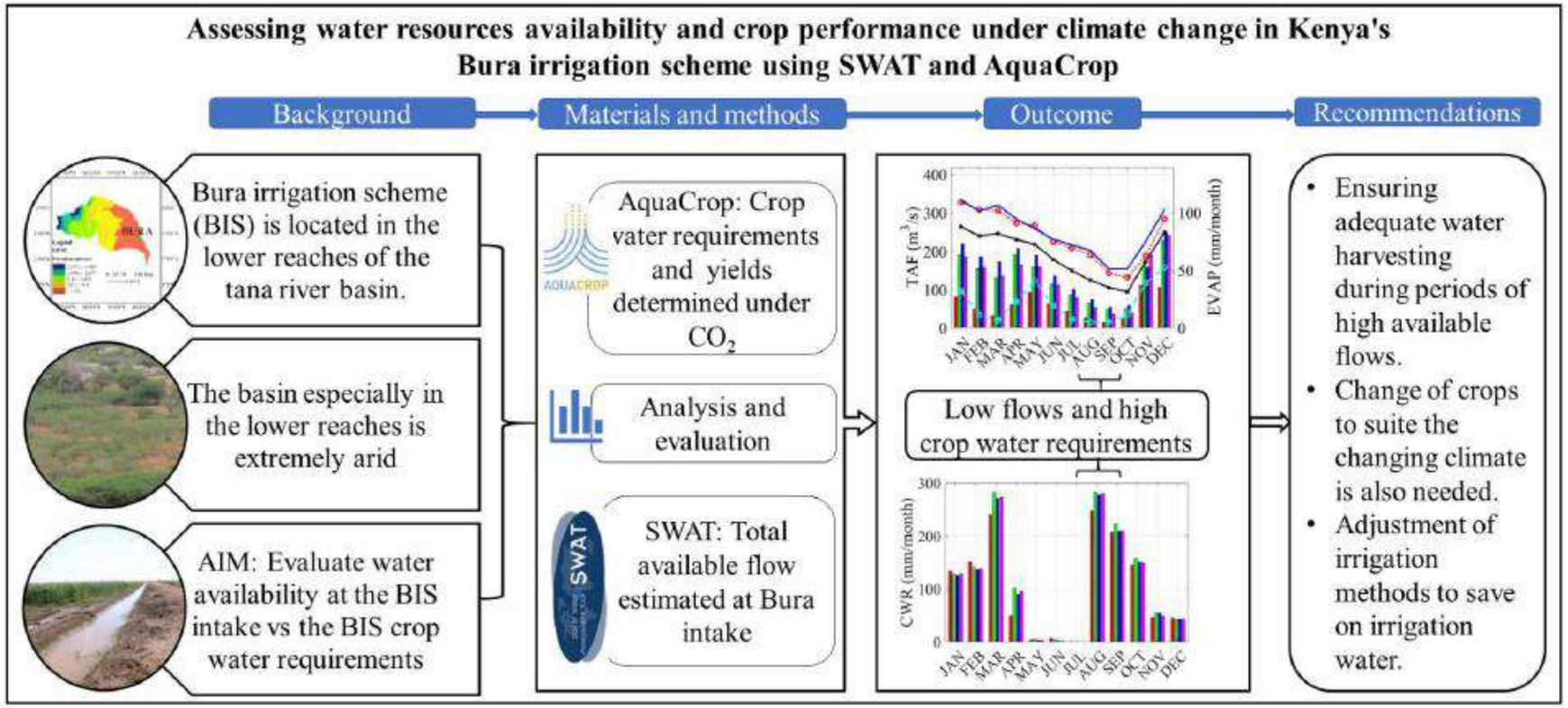

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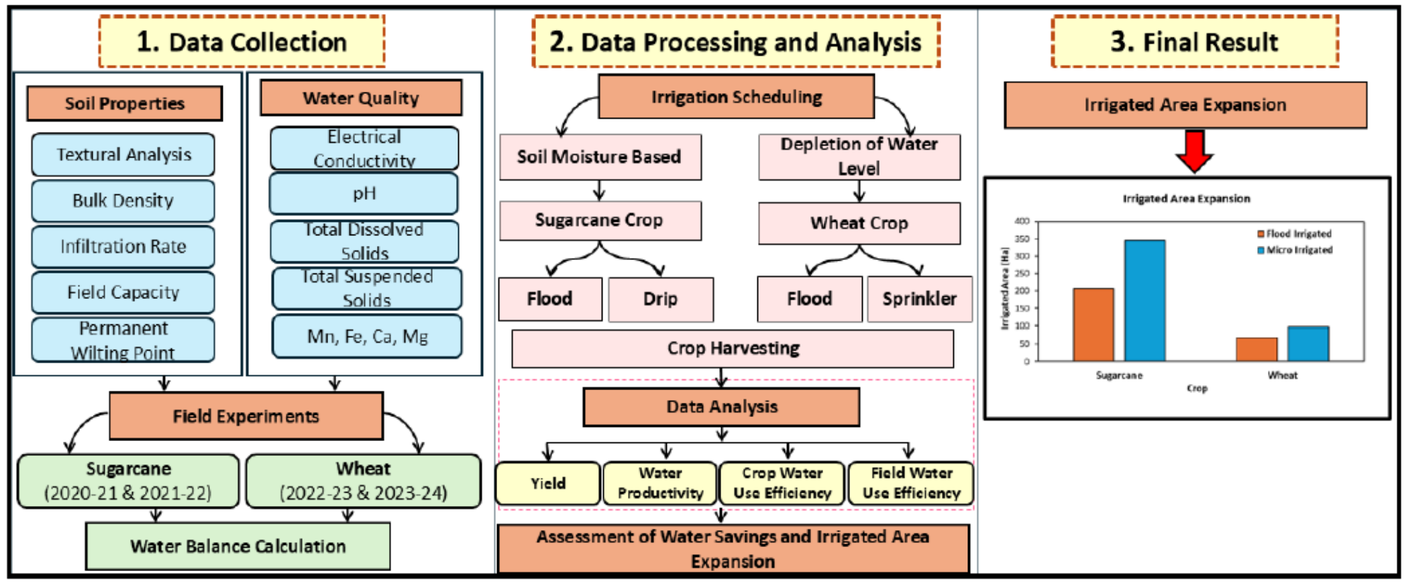
66 **Graphical Abstract**

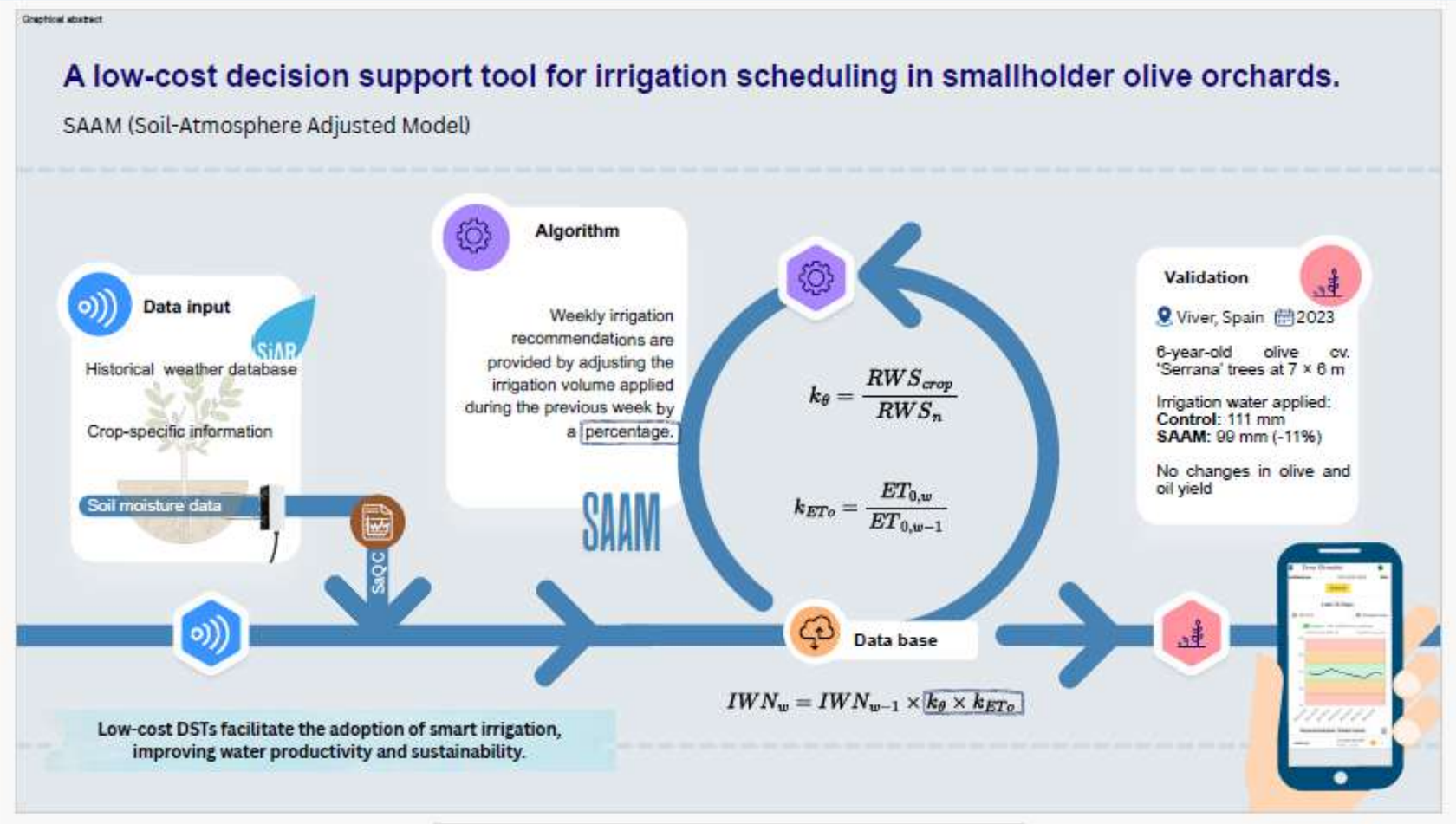


67

68 **1. Introduction**

69 Water is a vital crop production resource critical to ensuring global food security. Agriculture accounts
70 for approximately 70% of global freshwater use, with demand projected to increase by 60% by 2025

Graphical Abstract



Highlights

Highlights

- Top sealing soil provided more stable soil moisture and temperature conditions.
- Side sealing soil improved cotton emergence rates and reduced emergence time.
- Side sealing soil will not affect cotton emergence rate at 52.5 mm irrigation amount.
- Side sealing soil saves 41.67% and 70.83% of water without affecting cotton emergence.

Highlights

Highlights

1. Dynamic pressure does not significantly affect the irrigation uniformity of emitters.

2. Dynamic pressure increases the fertigation time of the Non-axisymmetric Venturi Injector.

3. Dynamic pressure can markedly enhance the fertigation uniformity of drip tapes.

4. Different kind of emitters require the selection of appropriate combinations of dynamic pressure parameters.

Highlights

HIGHLIGHTS

- PySEBAL (Landsat-based SEBAL) and FAO WaPOR were integrated to estimate seasonal evapotranspiration (AET), biomass production, and water productivity in irrigated sugarcane fields in southern Malawi.
- PySEBAL provided fine-resolution (30 m) biomass and AET outputs that strongly correlated with field-measured sugarcane yields (R^2 = 0.74 in 2019; 0.68 in 2020), confirming its suitability for field-scale irrigation performance assessment.
- WaPOR biomass and AET products showed strong inter-model agreement with PySEBAL (R^2 = 0.88 in 2019; 0.80 in 2020), demonstrating the reliability of multi-sensor data integration for seasonal irrigation monitoring.
- Water productivity declined from 5.2 kg m^{-3} (2019) to 4.1 kg m^{-3} (2020) despite biomass gains, largely due to disproportionate increases in AET linked to higher evaporative demand and suboptimal irrigation scheduling.
- Spatial analyses revealed heterogeneous irrigation performance across scheme blocks, highlighting localized inefficiencies and demonstrating the operational value of remote sensing for precision irrigation and water-use optimization in data-scarce environments.

Highlights

Highlights:

1. True irrigation area samples were derived from four types of in-situ measurement data.
2. Irrigation area products were evaluated for area accuracy and spatial consistency.
3. Inter-product variability was assessed for each irrigation area product.
4. A Comprehensive Evaluation Index assessed product suitability across districts.

Highlights

Highlights

1. Irrigation increased the total root length, total root surface area, root volume, fresh/dry shoot biomass.

2. Drought-resistant variety (LD14) had higher CAT activity and soluble protein content but lower MDA content than those of drought sensitive variety (LD21).

3. The vessel diameter of LD14 was larger than that of LD21 under the same irrigation condition.

4. The mitochondrial of LD21 was damaged more severe than that of LD14 on non-irrigated conditions.

5. KEGG analysis revealed that DEGs and DAMs in different comparison groups were mainly enriched in fatty acid degradation, flavone and flavonol biosynthesis, plant hormone signal transduction, etc.

List of symbols and abbreviations

Environmental and Experimental Botany 103 (2014) 158–179

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Understanding olive adaptation to abiotic stresses as a tool to increase crop performance

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ABSTRACT

In this work we give an overview of both morphological characteristics and physiological mechanisms responsible for the high adaptability of olive to harsh environments, and how this knowledge is currently used to design new sustainable and efficient crop management practices. We first describe the biennial vegetative and reproductive cycle of olive, and how these are affected by environmental conditions. Then we address main morphological, functional and physiological traits of olive that may contribute to stress tolerance. We also summarize innovative crop management practices that have been developed from our understanding of the mechanisms of response to abiotic stresses.

1. Introduction

Olive has become a major crop in wide arid and semi-arid areas due to both its capacity to grow and produce acceptable yields under harsh environmental conditions and the demand for olive products, especially olive oil, which is considered by an increasing number of consumers as a key ingredient for a healthy diet. In addition, olive has shown a marked response to improved crop management practices. Both circumstances explain the substantial increase, since the 1980s, in the number of research groups focussed on understanding the biology of this species and its response to the environment, as well as on using the acquired knowledge to improve crop management practices and to design new cropping systems for more sustainable olive orchards. As a consequence, a substantial amount of information on olive biology and olive growing has been published in the last decades. Main findings have been summarized in comprehensive reviews on biology and physiology (Lavee, 1996; Connor and Fereres, 2005), response to environmental stimuli (Bongi and Palliotti, 1994; Sanzani et al., 2012), and water use and irrigation (Fernández and Moreno, 1999; Gucci et al., 2012a; Carr, 2013). Other reviews focus on particular aspects, such as biology (Lavee, 1985, 1986; Fabbri and Benelli, 2000), drought stress (Xiloyannis et al., 1999), salinity stress (Gucci and Tattini, 1997; Ben-Gal, 2011), atmospheric pollutants and ultraviolet-B (UV-B) radiation (Sebastiani et al., 2002). The aim of this analysis is to highlight both the characteristics and the mechanisms responsible for the high adaptation of olive to harsh Mediterranean environments, and how this knowledge is currently used to improve sustainable crop management practices.

2. The olive biennial cycle

Commercial olive belongs to *Olea europaea* L., subspecies *sativa*. The growth and reproductive cycle is biennial because flower induction occurs at summer, at the time of endocarp sclerification (Fernández-Escobar et al., 1992), but flower initiation and differentiation occurs during the next spring (Rallo and Cuevas, 2010). Following a period of winter dormancy, flower initiation occurs soon after bud burst, about two months before flowering (Fig. 1). Some buds are initiated and some of those differentiate to produce inflorescences. The crop load of the current year affects flower induction, by compounds released from developing fruits that are translocated back to the buds. The inhibition of floral induction by fruit and seed growth contributes to alternate bearing, a typical feature of olive. Years of intense fruiting ('on' years) tend to be followed by years of restricted flowering and reduced crop load ('off' years), causing the pattern of biennial flowering and yield. During the 'on' year, the developing fruits limit vegetative growth of the current year and flowering of the following year (Cuevas et al., 1994; Lavee, 1996). Results reported by Dag et al. (2010) suggest that flowering-site limitation, due to insufficient or immature vegetative growth during the 'on' years is the primary factor inducing alternate bearing in olive. Details on the phenological stages of olive are given in Sanz-Cortés et al. (2002).

2.1. Shoot growth

In winter, during dormancy, air temperature (T_a) values of −7 to −8 °C can cause damage to olive, although resistance to temperatures as low as −18 °C have been reported (Sanzani et al., 2012). The threshold temperature below which frost damage occurs mostly depends on cultivar, plant age, sanitary and nutritional status. In the spring, during active shoot growth, olive is very sensitive to frost injury, and can suffer damage even at temperatures just below freezing, especially in tissues with high water content, such as the apexes of young leaves. It has been reported that organ sensitivity to low temperatures is in the order drupes > roots > new leaves > older leaves > twigs > buds (Florino and Mancuso, 2000; Granitt et al., 2011).

After a period of winter dormancy, and when T_a is above 12 °C, shoot growth starts. In the northern hemisphere this occurs in early spring. Shoot growth rate and leaf size are cultivar-dependent and vary considerably according to plant age and vigour, and environmental conditions. A seasonal sequential change is apparent in current-year shoot (Lavee, 1996). In mid-summer, when T_a > 30 °C, vegetative growth decreases and new leaves are progressively smaller. In autumn, following the reduction in T_a, a second period of rapid growth may occur, when soil water is newly available. Shoot growth is affected by crop load, since shoots and fruits compete for assimilates. In 'off' years, shoot growth rate is usually more constant than in 'on' years (Rallo and Cuevas, 2010). Shoot growth rate also depends on whether the bud from which the shoot originates is lateral or apical, and on the parent shoot age (Castillo-Llanque and Rapoport, 2011).

2.2. Flowering

Olive blooms in spring, the exact date being related to the average daily T_a experienced approximately two months before (Rallo and Cuevas, 2010). Flowers are born on paniculate inflorescences of up to ~40 flowers each, which develop from buds in the leaf axis

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http://dx.doi.org/10.1016/j.envexpbot.2013.12.003

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Most used symbols and abbreviations

A	net CO_2 assimilation rate
ABA	abscisic acid
C_a	ambient CO_2 concentration
C_c	CO_2 concentration in the chloroplast
C_i	CO_2 concentration in the intercellular air spaces within the leaf
C_s	CO_2 concentration next to the stomata
D_a	vapour pressure deficit of the air
D_{l-a}	leaf-to-air vapour pressure deficit
DI	deficit irrigation, deficit irrigated
d.w.	dry weight
E_p	plant transpiration
E_s	soil evaporation
EC	electrical conductivity
ET_c	crop evapotranspiration
ET_o	potential evapotranspiration
FI	full irrigation, fully irrigated
f.w.	fresh weight
g_b	boundary layer conductance
g_c	cuticular conductance
G_c	canopy conductance
g_m	mesophyll conductance
g_s	stomatal conductance
$g_{s\text{-}max}$	maximum stomatal conductance
GMT	Greenwich mean time
GSI	growing season index
HR	hydraulic redistribution
HS	period of high sensitivity to water stress
I_p	photosynthetic photon flux density
IA	irrigation amount
IN	irrigation needs
J_{max}	maximum rate of electron transport at saturating irradiance
K_c	crop coefficient
k_l	leaf-specific conductivity
L_v	root length density
LA	leaf area
LFDI	low-frequency deficit irrigation
N_a	nitrogen content per unit leaf area
P	atmospheric pressure
P_e	air entry pressure
P_{eff}	effective precipitation
P_{50}	xylem pressure at which 50% loss of hydraulic conductivity occurs
PAR	photosynthetically active radiation
PLC	percentage loss of conductivity
P–M	Penman–Monteith
p–v	pressure–volume
R_p	plant hydraulic resistance
r_s	soil surface resistance
RDI	regulated deficit irrigation
RuBP	ribulose-1,5-bisphosphate
RUE	radiation use efficiency
RWC	relative water content
RWC_{tlp}	relative water content at turgor loss point
S_D	stomatal density
SAR	sodium adsorption ratio
SDI	sustained deficit irrigation
SHD	super-high-density
SLW	specific leaf weight
T_a	air temperature
t_{cw}	cell wall thickness
T_l	leaf temperature
T_s	soil temperature
TPU	triose phosphate utilization
UV-B	ultraviolet-B
$V_{c\text{-}max}$	maximum carboxylation efficiency
VC	vulnerability curve
WAB	weeks after bloom
WP	water productivity
WUE	water use efficiency
WUE_i	intrinsic water use efficiency
$\Delta\Psi$	gradient between soil and leaf water potential
ε	elastic modulus, modulus of elasticity
Ψ_l	leaf water potential
Ψ_p	leaf turgor potential
Ψ_{pd}	predawn leaf water potential
Ψ_s	soil water potential
Ψ_{stem}	midday stem water potential
Ψ_{tlp}	leaf water potential at turgor loss, or bulk turgor loss point
Ψ_x	xylem water potential
Ψ_π	leaf osmotic potential

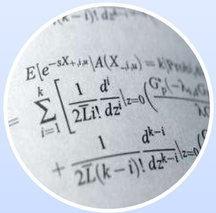
In the original manuscript, include the list after the Abstract

Title

Fewest possible words

Adequately describes content

Identifies main issue



Does not use rarely-used abbreviations

Effective manuscript titles

Titles

Soil aeration improves tomato fruit yield by regulating root characteristics and soil nitrogen cycle

Deficit irrigation reduced berry firmness and cracking in table grapes

Effects of Long-term Saline Water Irrigation on Soil Physicochemical Properties and Jujube Growth in Arid Oasis Regions

Coordinating irrigation and nitrogen fertilization with precipitation maximizes yield and economic traits in winter wheat

Correct but, which is the novelty?

Titles

Trade-offs among yield, economic benefits, water use efficiency and water footprint for wheat production under conversation tillage: A long-term field experiment

Trade-offs among yield, economic benefits, water use efficiency and water footprint for wheat production under conversation tillage

The border row privilege largely contributes to yield spring wheat improvement under the novel ridged enlarging lateral space drip irrigation patterns (ReDiP): the underlying physiological mechanism

???

Titles

The Stem Plays an Important Role in the Formation of Winter Wheat Grains under Water Management

Relevance of the Stem in the Formation of Winter Wheat Grains

The stem aids winter wheat grain formation under controlled irrigation

Quantification of phosphorus-uptake effect on table grape (Vitis vinifera L.) cvs. Early Sweet and Crimson physiology, growth, and productivity using a lysimeter system

Effect of phosphorus-uptake on growth and productivity of ‘Early Sweet’ and ‘Crimson’ grapes

Titles

Potential deficit irrigation adaptation strategies under climate change for sustaining cotton production in hyper–arid areas

Deficit irrigation strategies for cotton production in hyper–arid areas under climate change

Impact assessment of soil erosion on food security based on crop water productivity (CWP) concept in an agricultural watershed, Iran

Impact of soil erosion on crop water productivity and food security

Titles

Non-destructive method using UAVs for high-throughput water productivity assessment for winter wheat cultivars

The use of UAVs to assess water productivity in winter wheat

UAVs???

Connecting the drops - Deploying ICTs in Mediterranean irrigation systems

Meaning???

Titles

Researchers' feedback on the processes of adopting low technologies: the example of an open innovation hub in irrigated systems in the Mediterranean

Low technologies???

An open innovation hub????

In the Mediterranean basin? Area? Sea?

Titles

Using Chat GPT to improve the Title

Determining the effect of deficit irrigation applications on yield and quality parameters in grapefruit irrigated by subsurface drip irrigation and economical assessment

- Effect of Deficit Subsurface Drip Irrigation on Yield, Quality, and Economic Performance of Grapefruit

- Impact of Deficit Subsurface Drip Irrigation on Grapefruit Yield, Quality, and Economics

- Yield, Quality, and Economic Responses of Grapefruit to Deficit Subsurface Drip Irrigation

Authors and addresses

Agricultural Water Management

Green manure incorporation with nitrogen reduction optimized water use characteristics and improved crop water productivity

--Manuscript Draft--

Manuscript Number:	AGWAT-D-25-00476
Article Type:	Research Paper
Keywords:	Green manure incorporation; Nitrogen reduction; Water use characteristics; Grain yield; Water productivity
Corresponding Author:	Aizhong Yu Gansu Provincial Key Laboratory of Aridland Crop Science/College of agronomy, Gansu Agricultural University CHINA
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	Jianzhe Huo
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	Yue Li
Abstract:	Water scarcity and high grain yield are the two critical challenges for sustainable agricultural development. Appropriate amounts of green manure (GM) incorporation

All authors belong to the same lab

Authors and addresses

Gao, S.J., Zhou, G.P., Chang, D.N., Liang, H., Nie, J., Liao, Y.L., Lu, Y.H., Xu, C.X., Liu, J., Wu, J., Han, S., Wang, H., Liu, C.Z., Lyu, Y.H., Huang, Y.B., He, C.M., Geng, M.J., Wang, J.H., He, T.G., Li, Z.Y., Liang, H., Li, S., Robert, M.R., Kristian, T.K., 2023. Southern China can produce more high-quality rice with less N by green manuring. Resour. Conserv. Recy. 196, 107025.

Unfair competition in international contests?

Authors and addresses

nature communications

Article

https://doi.org/10.1038/s41467-023-37428-6

Soil contamination in nearby natural areas mirrors that in urban greenspaces worldwide

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Check for updates

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Authors and addresses

Hyperprolific authors
(more than 72 papers per year)*

* "…a figure that many would consider implausibly prolific"

Abstract

This is the advertisement of your article. Make it interesting and understandable

Make it accurate and specific

A clear abstract will strongly influence whether or not your work is considered

Keep it as brief as possible

See the Guide for Authors. In between 200 and 300 words

Abstract

Abstract:

Revealing water use under different cropping systems is a key to solving the issues caused by water shortage in the agro-pastoral ecotone (APE) of China. In this study, APSIM model was applied to simulate the impacts of diversified crop rotations on crop yields and water use in the APE in 1981-2020. Four typical crops including potato, oat, maize, and fababean were selected, continuous single cropping and rotations of two-four crops were set, with totally 14 cropping systems. For each cropping system, 2 water conditions (rainfed and irrigated) and 5 levels of N fertilizer (0, 50, 100, 150 and 200 kg ha-1) were set. The results showed that APSIM model performed well in simulating soil water content (RRMSE<15.9%), evapotranspiration (ET) (RRMSE<14.8%), and yields (RRMSE<14.6%) under different cropping systems. To maximize cropping system's yield under rainfed condition, continuous single cropping of potato was recommended in the northeastern and middle APE, while in the in the eastern and western APE continuous single cropping of maize was recommended when N exceeded 100 kg ha-1. To achieve the highest yield under irrigated condition, potato-fababean rotation system should be arranged without N fertilizer input in the northeastern and western APE, and continuous single cropping of potato should be planted when N exceeded 50 kg ha-1, and this cropping system performed well across all N levels in the eastern and middle APE. However, highest-yield systems decreased groundwater table significantly under irrigated conditions. Continuous single cropping of potato or potato-fababean rotation system maximized cropping system's water use efficiency in the APE under both water conditions. To recovery groundwater table most under rainfed condition, continuous single cropping of oat should be arranged under lower N inputs in the APE. Our study would be helpful in determining the optimal cropping systems for different agriculture production goals in the APE.

305 words, when the maximum allowed is 250

Abstract

Abstract

Aims. To address and restore grassland degradation on the Qinghai-Xizang Plateau (QXP), government-led ecological restoration plans and policies have been implemented in recent years. However, a comprehensive and systematic evaluation of the sustainability of these restoration efforts is lacking, and a consensus has yet to be achieved.

Methods. We used the minimum data set (MDS) method to identify appropriate indicators to assess plant and soil quality indices and resilience of regrazed grasslands with different durations of grazing.

Results. In the early stages following the establishment of seeded grasslands, vegetation productivity and soil nutrient levels significantly increased; however, this increase was accompanied by a reduction in plant diversity. Continuous grazing on these seeded grasslands subsequently resulted in secondary degradation. The results revealed that the resilience and quality indices of the plant-soil systems of the seeded grasslands continued to decline from the 0th to the 13th year of grazing. More management interventions are needed after the establishment of seeded grasslands. In contrast, fences maintained greater plant diversity and more stable long-term ecosystem conditions than seeded grasslands did, indicating that passive restoration may produce more sustainable results than may active restoration. The different performances of the seeded grassland and fenced areas during the long-term successional stage after grazing resumed may be attributed to variations in plant diversity.

Conclusions. Fences can serve as a more effective restoration method than seeded grasslands achieving greater sustainability in terms of recovery outcomes on the QXP.

Wrong format

Abstract

Abstract:	Global water scarcity is a major challenge for agricultural sustainability, particularly in semi-arid regions like Morocco. This study explores the potential of AquaCrop-OSPy, an open-source Python implementation of the AquaCrop model, combined with an optimization algorithm to improve irrigation scheduling and enhance water productivity in drip-irrigated wheat fields. The research was conducted over two growing seasons (2016/2017 and 2017/2018) in two wheat fields in the Chichaoua region, Haouz Plain, Morocco: Field 1 (stressed conditions) and Field 2 (normal conditions). The model was calibrated using canopy cover (CC), biomass (B), and actual evapotranspiration (ETa) collected during the first season, achieving R^2 values between 72% and 98%, and RMSE values of 0.10, 0.15 tonne/ha, and 0.61 mm/day, respectively. Validation in the second season yielded R^2 values from 74% to 93% with RMSE values of 0.09, 0.44 tonne/ha, and 0.55 mm/day, confirming model reliability. Three irrigation strategies were assessed: Real Irrigation (farmers' practice), NET Irrigation (fixed threshold), and Soil Moisture Target (SMT, crop-stage-specific thresholds). Results showed significant improvements in water saving and productivity. In Field 1, optimized SMT reduced water use by 31% in the first season and 23% in the second, while WP_irrigation rose to 2.33 and 2.08 kg/m³. NET optimization reduced water use by 20% across both fields and seasons, improving WP_irrigation to 1.86 and 1.99 kg/m³. These results highlight SMT's potential for sustainable water management, achieving better water–yield balance than NET. This study confirms AquaCrop's potential for optimizing irrigation and offers practical tools for water-scarce regions.

Wrong use of abbreviations

Abstract

Abstract:

Information and data about quantification and comparison of crop water productivity indices for various irrigation levels and methods and nitrogen (N) application timings “simultaneously” under the same conditions do not exist. Unprecedented and extensive field experiments were conducted for maize (Zea mays L.) in 2016 and 2017 under center pivot (CP), subsurface drip irrigation (SDI) and surface (furrow) irrigation (FI) methods with full irrigation treatment (FIT), 80% FIT, 60% FIT and rainfed treatment (RFT) with three N application timings. N treatments were: (i) traditional (TN), (ii) non-traditional-1 (NT-1) and (iii) non-traditional-2 (NT-2). Irrigation-yield production functions (IYPF); evapotranspiration-yield production functions (ETYPF), basal evapotranspiration (ETb), crop water productivity (CWP), irrigation water use efficiency (IWUE); evapotranspiration water use efficiency (ETWUE) and yield response factors (Ky) were quantified for each treatment and irrigation method. SDI method required the least seasonal irrigation amount in achieving maximum yield, followed by CP (>~30 mm more than SDI) and FI (>~55 mm more than SDI). Average crop water requirement for achieving maximum grain yield varied among the N treatments within and between the irrigation methods. Irrigation amounts for achieving maximum yields were about 160, 175 and 175 mm in TN, NT-1 and NT-2 nitrogen treatments, respectively, in the CP method; 130, 150 and 150 mm in TN, NT-1 and NT-2 nitrogen treatments, respectively, in the SDI method; and 184 mm in TN management in the FI method. The highest grain yield production per 25.4 mm of applied irrigation followed the order of CP-TN (2.07 Mg ha -1)>SDI-NT-2 (1.91 Mg ha -1)>FI-TN (1.22 Mg ha -1). Across all treatments for the given irrigation method, the highest averaged CWP of 3.00 kg m -3 (slope = 0.067 kg m -3) was observed in the SDI method ($p<0.05$) followed by 2.84 kg m -3 (slope = 0.052 kg m -3) in the CP method ($p<0.05$) and 2.51 kg m -3 (slope = 0.046 kg m -3) in the FI method. The lowest ETb was observed in FI-TN (169 mm), followed by CP-NT-2 (172 mm) and SDI-TN (255 mm). For two consecutive years, N treatments did not have significant ($p>0.05$) influence on IWUE in the CP or SDI methods. The highest IWUE, CWP and ETWUE were always obtained with limited irrigation treatments (60% FIT and/or 80% FIT) whereas the lowest with FIT. Maize under limited irrigation management had Ky < 1 with CP, SDI and FI along with lower Ky values than the respective TN treatment in CP and SDI, suggesting that the yield reduction is impacted to a lesser degree from the magnitude of water stress. The overall conclusion disclosed that utilizing the combination of limited irrigation (80% FIT) with NT-1 fertigation under SDI and CP, while 80% FIT under FI can be viable management practices/strategy for achieving higher grain yield and CWP in conditions similar to those presented in this research.

Many wrong details

Keywords

Used by indexing and abstracting services

Are the labels of the manuscript

Use only established abbreviations e.g. DNA

Do not repeat words in the title

Keywords

Coupling effect and comprehensive evaluation of micro-nano bubble water with biochar on cucumber yield and quality under subsurface drip irrigation

--Manuscript Draft--

Manuscript Number:	AGWAT-D-25-03002
Article Type:	Research Paper
Section/Category:	Irrigation scheduling, Water stress and deficit irrigation, crop water used
Keywords:	Acid sticky red soil; Subsurface drip irrigation; Micro-nano bubble water; Biochar; Yield and quality; Comprehensive evaluation

Words already in the Title should not be used as Keywords

Keywords

Modelling the impact of long-term ridge-furrow with plastic mulching combined with irrigation on the carbon footprint of wheat production in dry semi-humid areas

--Manuscript Draft--

Manuscript Number:	AGWAT-D-25-02550
Article Type:	Research Paper
Section/Category:	Water productivity
Keywords:	Plastic-mulched ridge and furrow rainwater harvesting; Yield; Greenhouse gas emissions; Denitrification-decomposition model; Random Forest; SHAP

Choose proper Keywords

Keywords

A global meta-analysis on the effects of aerated irrigation on crop yield components and fruit quality
--Manuscript Draft--

Manuscript Number:	AGWAT-D-25-02553
Article Type:	Research Paper
Section/Category:	Irrigation scheduling, Water stress and deficit irrigation, crop water used
Keywords:	Aerated irrigation; Crop yield; Yield components; fruit quality; Meta-analysis

Choose proper Keywords

Introduction

INTRODUCTION

Subsurface drip irrigation (SDI) has emerged as a highly efficient irrigation method, capable of delivering water directly to the root zone through a network of buried lateral pipes and emitters(Guo et al. 2023; Kandelous and Šimůnek 2010a; Wan et al., 2024). This system minimizes water loss due to surface evaporation and runoff, enhances nutrient delivery(Zhao et al., 2024a), and supports precision agriculture, particularly in water-scarce environments (Zai et al., 2025). SDI systems can be powered by pumps or by gravity(Sahu et al., 2024; Gunarathna et al., 2017). When operated without a pump, using elevation to generate the necessary pressure, the system is referred to as gravity-fed subsurface drip irrigation (GSDI). GSDI is especially attractive for rural regions where electricity is unreliable or unavailable, making it a cost-effective and energy-independent solution (Wang et al., 2021).

The performance and successful implementation of GSDI systems depend on an integrated understanding of both soil–water dynamics and key hydraulic design parameters, including infiltration rate, maximum irrigation depth, pipe diameters, lateral length, pressure head at emitters, emitter flow rate, system uniformity, and different interaction within those factors (Abbas et al., 2016; Gil et al., 2008a; Kargas et al., 2023; Zai et al., 2025). For instance, Shani et al. (1996) indicated that when emitter discharge surpasses soil infiltration capacity, pressure builds up at the outlet, lowering flow rates by 10-50%. Soil variability affects emitter flow rates and irrigation uniformity, where elevated design discharges or diminished soil hydraulic conductivity result in increased soil pressure and decreased flow (Nogueira et al.,2021b; Wang et al., 2024a). This demonstrates the substantial influence of soil hydraulic properties on the performance of subsurface drip irrigation (SDI) systems, particularly under gravity-fed, low-pressure conditions. In such systems often operating with about 2 m of hydraulic head, the buildup of positive soil water pressure (backpressure) around emitters can significantly reduce discharge and compromise uniformity, as demonstrated by coupled modeling studies (Lazarovitch et al., 2006). Moreover, laboratory and field observations confirm that soil-induced overpressure at the emitter outlet alters discharge rates in buried emitters (Gil et al., 2008; Hammami et al., 2013; Jia et al., 2025). These findings underscore the need for a holistic SDI design approach that carefully integrates soil hydraulic characteristics, emitter behavior, and system hydraulics, especially when pumps are not used to regulate pressure.

Gravity-fed subsurface drip irrigation (SDI) systems are highly sensitive to hydraulic losses because they operate at very low inlet pressures, typically between 1.5–2 m of water head(Raphael et al. 2018; Patle, 2024). Under such conditions, even minor head losses from pipe friction, fittings (local losses), or elevation differences consume a substantial portion of the available pressure, leading to significant variations in emitter discharge and reduced emission uniformity (poor emission) (Provenzano and Pumo, 2004;Provenzano et al. 2005). This contrasts with pressurized systems, where higher operating pressures can compensate for such losses, thereby maintaining more stable flow conditions across the network.

The accuracy in the assessment of total head losses is fundamental for the design of the GSDI system, taking into account both friction and local losses(El-Mansy et al., 2024; Martí et al., 2023; Nogueira et al., 2021; Patle, 2024b; Wang et al., 2024a, 2020). Strategies to mitigate such losses include optimizing lateral lengths, selecting appropriate pipe diameters, and using proper emitter spacing and types(Keller & Karmeli,1974; El-Mansy et al., 2024). Ensuring consistent emitter flow rate across the field is crucial for achieving uniform water application and overall system performance.

At the global level, numerous researchers (e.g. Salu et al., 2024b; a; Abbas et al., 2016; Annan and Gooda, 2018; Gil et al.; 2008b; a; Guo et al., 2023; Patle, 2024; Zhao et al., 2024b) have focused on the design, optimization, and performance evaluation of localized irrigation systems, particularly drip and subsurface drip irrigation (SDI).

Various indicators have been employed to evaluate the hydraulic behavior and uniformity of water application in drip and subsurface drip irrigation systems, with the most common being Christiansen's coefficient of uniformity (CU), distribution uniformity (DU), emission uniformity (EU), application efficiency (AE), and the coefficient of variation (CV) (Sadatiya et al., 2019; Elnemr and Amer, 2020). CU, originally developed for sprinkler irrigation, has been adapted for localized irrigation to statistically assess the evenness of water application(Christiansen, 1942), while EU measures emitter discharge variability, with higher values indicating more consistent water delivery(Keller and Karmeli, 1974). DU focuses on the adequacy of irrigation by comparing the lowest quarter of applied water to the overall mean(Burt et al., 1997), and AE evaluates the proportion of applied water effectively stored in the crop root zone(Griffiths, 2006). CV, on the other hand, quantifies emitter discharge variability and provides insights into manufacturing precision and hydraulic performance(Kunapara et al., 2024; Sinha,2015). These indicators are widely used to assess water distribution in irrigation systems, where the findings from these studies generally demonstrate that high levels of uniformity can be achieved when systems are properly designed, installed, and maintained. Moreover, these studies offer practical recommendations regarding emitter spacing, operating pressure, irrigation depth, infiltration characteristics, and system layout, all of which are tailored to specific soil textures, crop types, and climatic conditions.

However, in Sub-Saharan Africa (SSA), irrigation remains significantly underutilized (Haile et al., 2022), and is the least developed worldwide (You et al., 2011; Nhamo et al., 2024), despite its crucial role in enhancing food production and reducing hunger in the region (Balasubramanya and Lele, 2022). This underuse is further compounded by limited research efforts aimed at developing context-specific irrigation technologies (Pavelic et al., 2013; Bjornlund et al., 2020) at the predominantly tropical

different variables required for the A&P estimates identified leaf resistance (r_l) as the most influential variable affecting K_c, ET_c and consequently IN. Therefore, in the second season, a model for estimating stomatal conductance (g_s) was used and r_l values were derived inverting these values. This adjustment reduced the discrepancy in IN between the approaches to only 7%. The differences between the approaches were still not significant in the second season, suggesting that the higher IN values estimated by the A&P could be further adjusted. The results suggest that more reliable estimates of the soil water evaporation (E_s) are needed to further refine the A&P approach.

Keywords: precision irrigation, sustainable irrigation, crop water use, water status, leaf resistance, olive yield.

1. Introduction

The Mediterranean region is the world's leading producer, consumer, and exporter of olive oil (Viola et al., 2013; International Olive Council, 2024). The European Union accounts for 45% of the world's olive cropping area, with Spain being the leading producer (FAO, 2025). In 2024, the olive-growing area in the country has reached about 2.8 million hectares, according to the Survey on Crop Areas and Yields in Spain (MAPA, 2024). Traditional rainfed orchards are increasingly being replaced by irrigated orchards with higher planting densities, such as the super-high-density (almost 2000 trees ha^{-1}) hedgerow system (Pereira et al., 2024). This is one of the most profitable olive cropping systems, although the irrigation management is particularly challenging (Fernández et al., 2020). Although the olive tree is one of the most suitable and adapted species to drought conditions (Fernández, 2014), higher yields are obtained when irrigated (Expósito and Berbel, 2017; Serrano et al., 2024). In recent years, the irrigated area has expanded, and currently irrigated olive orchards represent 32%, with an increase trend of about 18% in the last decade (2014-2024). This trend highlights the growing dependence of olive cultivation on irrigation (MAPA, 2014, 2024).

Recent climate projections indicate significant changes in atmospheric conditions in the main olive growing areas in the Mediterranean basin (Fraga et al., 2020, 2021; Arenas-Castro et al., 2020; Freitas et al., 2024), including an increase in the climate demand conditions and a decrease in precipitation (Tanasijevic et al., 2014; Mairech et al., 2021; IPCC, 2022). Many olive growing areas in the Mediterranean basin are projected to be climate change hotspots (e.g. Lorenzo and Alvarez, 2022), where water scarcity is projected, which is a major concern for growers and researchers and may affect irrigation management of olive orchards (Branquinho et al., 2021). Therefore, the growing imbalance between water availability and demand highlights the urgent need for strategies and tools that promote efficient water use in agriculture, minimize

Introduction

untreated plants. Similarly, Abdalla (2014) showed that MLE and twig extract (2% and 3%, respectively) effectively improved biomass production, photosynthetic pigments, total sugars, total proteins, growth promoting hormones and various essential mineral elements of rocket (*Eruca vesicaria* subsp. *sativa*) compared to untreated plants. Although moringa aerial parts such as leaves, flowers and seeds are a rich source of plant growth hormones and phytochemicals and could be an effective source of biostimulant extracts, previous research has mainly focused on the potential of its leaves whereas little is known about moringa seed extract (MSE) (Al Taweel et al., 2019; Zhu et al., 2020). Therefore, the current study investigated the potential of MSE on enhancing water deficit stress tolerance by evaluating growth and yield parameters and chemical composition of cancer bush plants grown under DI.

2. Material and methods

Introduction

as the economic benefits obtained from the output (i.e., agricultural yield) and the related costs of water use in agricultural production systems (Brar et al., 2015). Different ratios have been reported to describe eco-efficiency indicators in the agricultural economics literature (Fernández et al., 2020). For example, Kumar et al. (2019) in Punjab (India) proposed the ratio of "gross return value to water supplied" to calculate water use efficiency in rice paddy and wheat. In Southern California, Dinar (1993) proposed the ratio between the net value of output and the water supplied. Sutton and Jones (1994) define eco-efficiency as the net profit per unit of area at the crop field level. Consequently, finding the best rice cropping system requires an economic evaluation of production costs and net returns along with higher profitable yields.

Comprehensive studies on environmental and economic impacts linked to various rice production systems were not studied in northern Iran. This is necessary for deeper insights into achieving sustainable agricultural goals. Therefore, this study aimed to compare the GHG emissions and economic analysis in different rice paddy production systems under the combination of three factors: two water irrigation sources (groundwater and surface), two groups of rice cultivars (low- and high-yielding), and two transplanting methods (traditional and mechanical).

Introduction

perennial fruit trees and annual crops under drip irrigation, especially with regards to the aboveground and below-ground parts, are still unclear. Therefore, to maximize the use of resources and optimize current irrigation practices on the Loess Plateau, the alley cropping system photosynthetic characteristics, soil nutrients, and their interspecific interactions need to be investigated when different drip water combined with fertilizer regimes are applied.

The main objectives of our study were to investigate: (i) the effects of different drip irrigation water and fertilizer levels on the photosynthetic characteristics, soil nutrients, and their interactions in the system, and (ii) optimization measures for water and fertilizer management in an apple–soybean alley cropping system on the Loess Plateau of west Shanxi, China.

2. Materials and methods

Introduction

differences between cultivars or environmental factors (Hochberg et al., 2018; Mirás-Avalos and Intrigliolo, 2017).

In the present study, 13 Spanish red cultivars authorized for cultivation in Castilla-La Mancha region were monitored for three years under drought conditions in a multivarietal vineyard. The plants' responses were assessed based on agronomic indicators, including the yield, grape quality, and vegetative development. The carbon isotope ratio of the grape must sugars ($\delta^{13}C$) was measured at harvest as an indicator of vine water status. The study aimed to identify which cultivars maintain the highest yield and grape quality under rainfed conditions. This is the first comparative study of the drought behavior of grapevine cultivars performed in the La Mancha region. This study also provides information about minority cultivars recovered in recent years in Castilla-La Mancha region, including whether they may be suitable for cultivation in other semi-arid regions.

2. Material and Methods

Materials and methods

36 **1. Introduction**

37 Drought, especially agricultural drought, is a recurring natural disaster with a wide range of
38 impacts and significant destructive power, posing a substantial threat to food security. Climate

109 attribution of the underlying drivers governing drought distribution and change.

110 **2. Study area**

111 The Huang-Huai-Hai Plain (HHHP) is a major grain-producing region in China, spanning the
112 eastern provinces and municipalities of Beijing, Tianjin, Hebei, Anhui, Henan, Jiangsu, and

133 **3. Datasets and methods**

134 *3.1. Datasets*

135 The study used the GLEAM4 root-zone soil moisture dataset to calculate the agricultural drought
136 monitoring indicator. This dataset is a continuous, daily dataset covering 1980-2023 with a

Materials and methods

2.5.3 WaPOR Product Validation

WaPOR biomass (converted to tons/ha) and AET were compared to both PySEBAL estimates and field-measured yield data. Validation focused on inter-model agreement: correlation and RMSE between WaPOR and PySEBAL outputs and empirical accuracy: alignment of WaPOR biomass with harvest records. Temporal trends in WaPOR AET were evaluated for internal consistency and coherence with seasonal rainfall and irrigation patterns.

2.5.4 Evaluation Metrics

Model performance was evaluated using three standard statistical metrics: the Coefficient of Determination (R^2), which indicates the proportion of the variance in the observed data that the model successfully explains; the Root Mean Square Error (RMSE), which quantifies the average magnitude of the prediction error; and the Mean Absolute Error (MAE), a straightforward measure of deviation that is particularly useful for comparing model accuracy across different datasets or units because it provides a normalized error measure.

2.6 WaPOR Data Processing

To complement the image-driven analysis of PySEBAL, this study utilized satellite-derived data from the FAO's Water Productivity through Open Access Remotely Sensed Derived Data (WaPOR) portal. WaPOR provides spatially continuous, pre-processed remote sensing estimates of actual evapotranspiration (AET) and biomass production, specifically tailored to support agricultural water management across Africa and the Near East (FAO, 2020a).

Results

Be clear & easy to understand

Highlight the main findings

Feature unexpected findings

Provide proper statistical analysis

Include clear illustrations & figures

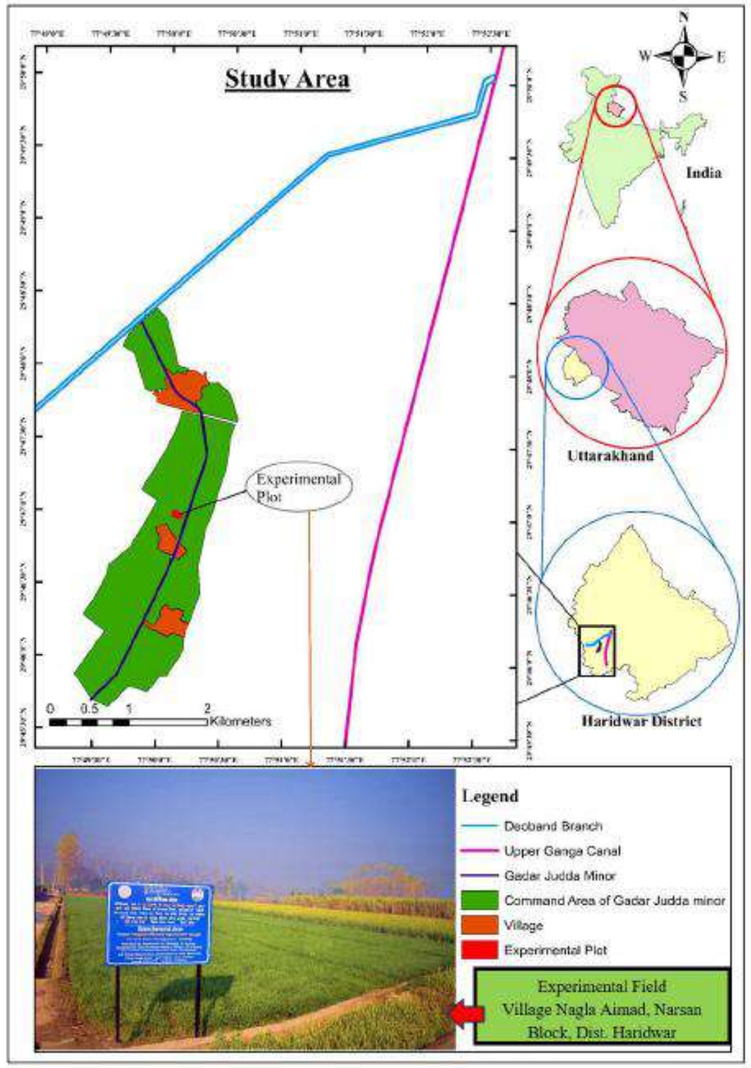
Results

3. Results and discussion

3.1. Household characteristics

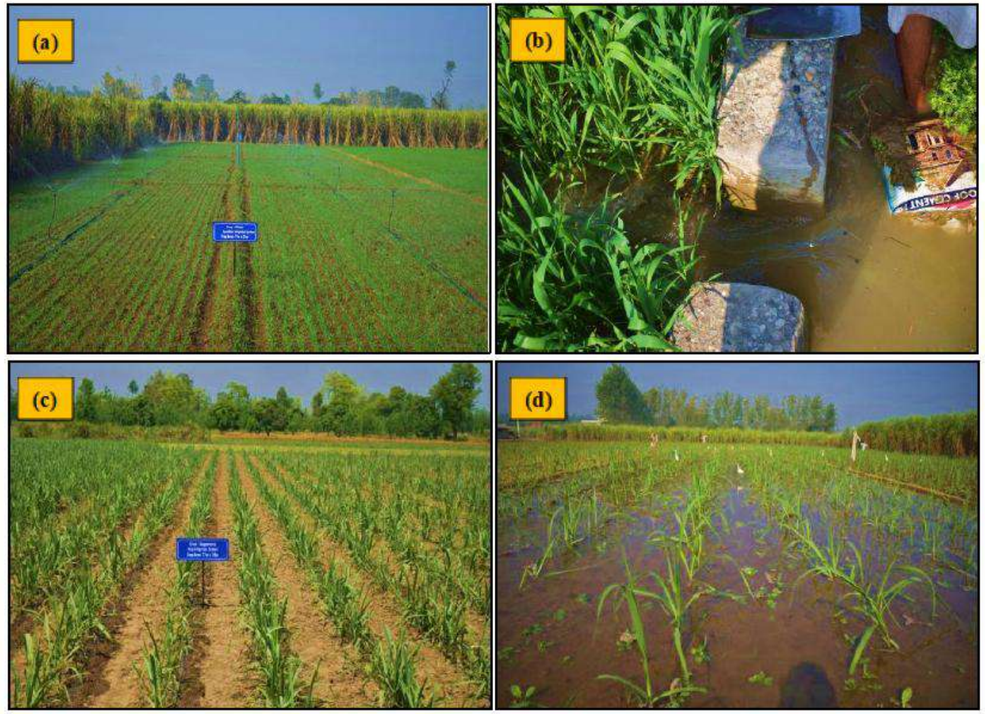
As illustrated in Table 3, approximately 84.6% of the sampled households were male-headed, while the remaining 15.4% were female-headed. The findings indicate that male-headed households engaged in irrigated wheat production at a higher rate than their female-headed counterparts. The age of the household heads ranged from 28 to 72 years, with a mean age of 44.10 years. In terms of family size, measured in adult equivalents, the size varied from a

Figures



182

183 Fig. 1: Location of study area and Experimental field



422 Fig. 9: (a) Sprinkler Irrigation in wheat (b) Flood irrigation in wheat (c) Drip irrigation in sugarcane
423 (d) Flood irrigation in sugarcane

Figures

Figure 6: Laboratory testing of hydraulic properties of the sampled soil

Figures

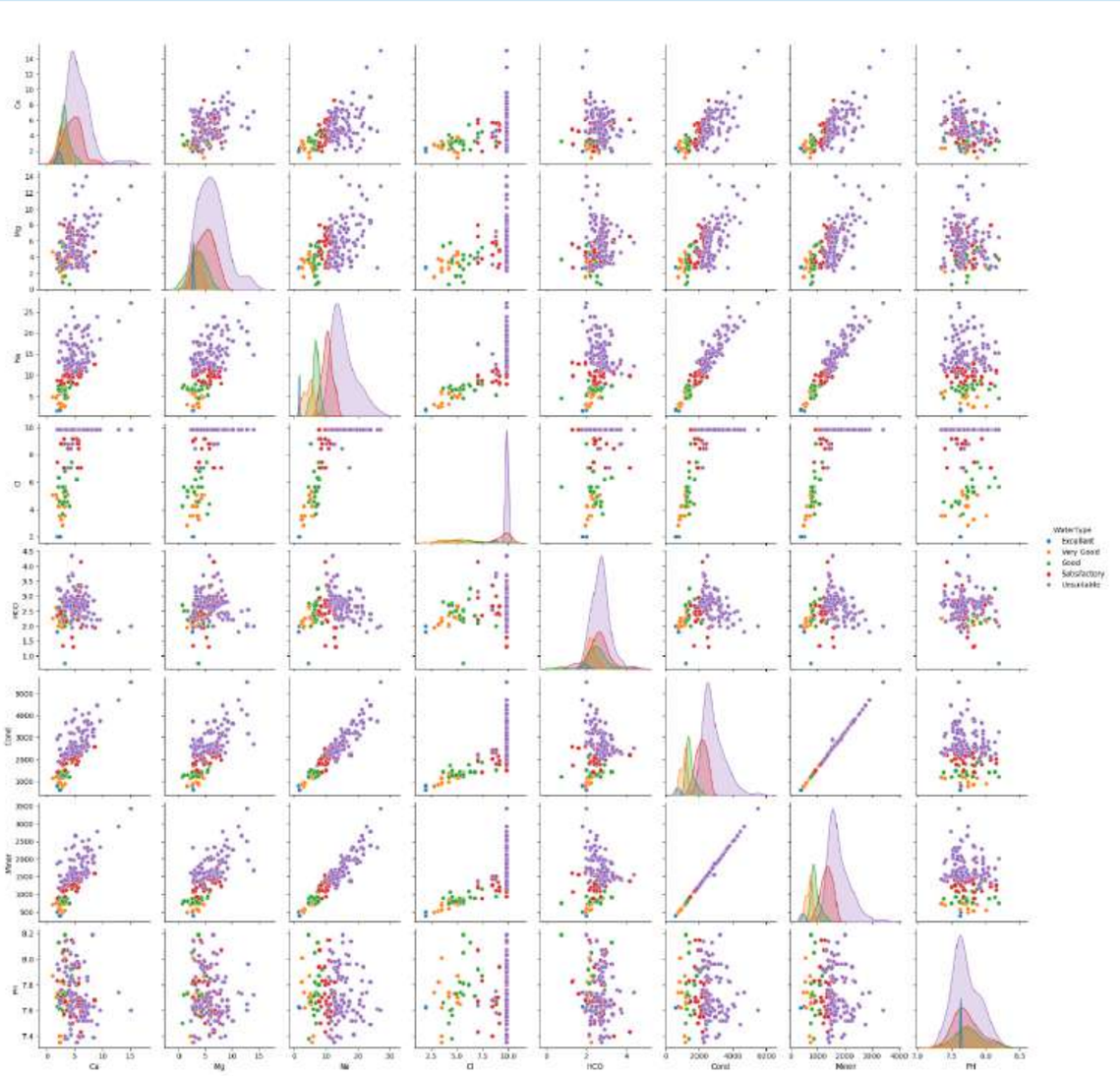


Figure 3. different types of correlations between different elements

Figures

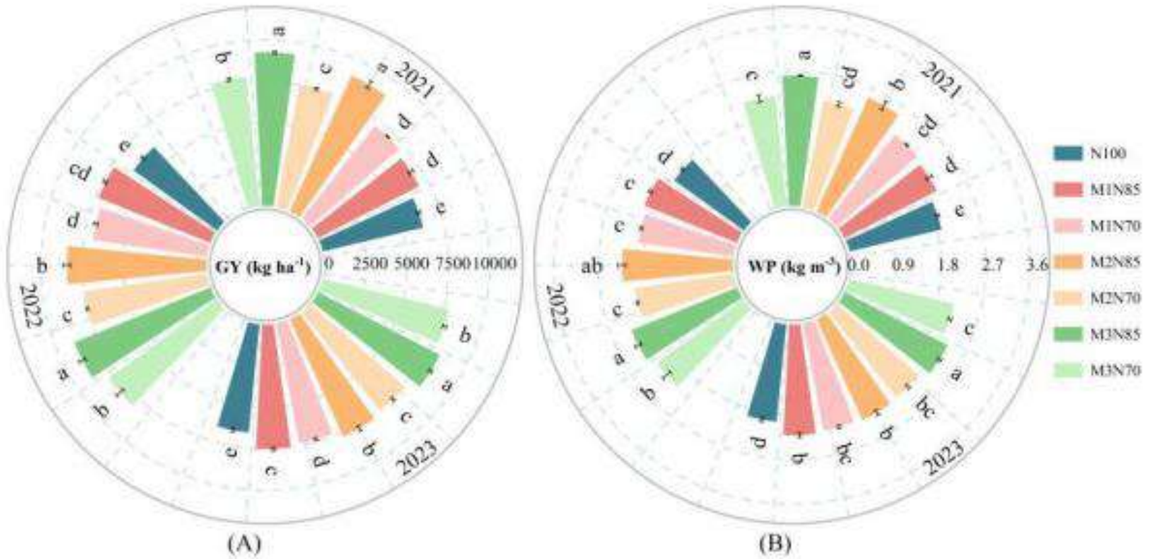


Fig.3. GY (A) and WP (B) under different treatments in 2021, 2022, and 2023. Different letters indicate significant differences between treatments ($P<0.05$). The error line represents the standard error of the mean (n=3). The description of the treatment codes is shown in Table 1. The same is below.

Figures

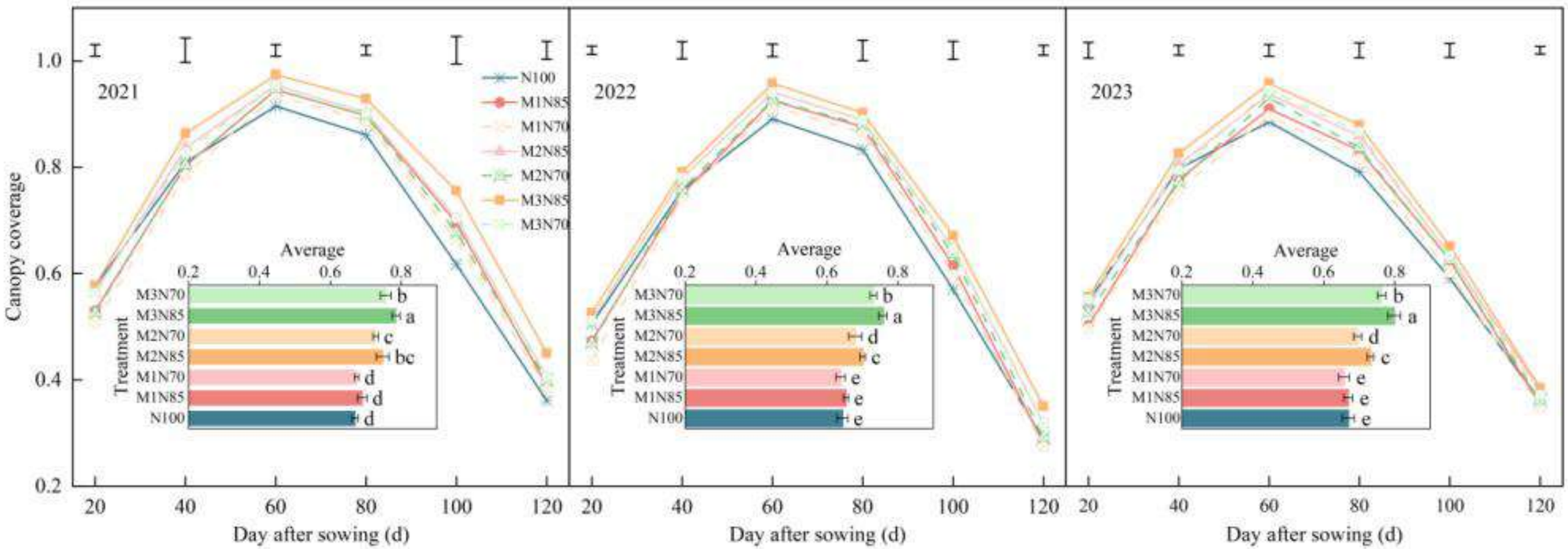


Fig.7. The dynamic changes of canopy coverage under different treatments in 2021, 2022, and 2023.

Tables

Table 3. Yield, Straw, HI, WUE, and TSW for all treatments.

Treatment	Grain yield (kg/ha)	Straw yield (kg/ha)	HI (%)	IWUE (kg/(ha·mm))	TSW (g)
CK	11701.12±705.34b	17048.52±950.31a	40.70±1.67c	78.01±4.70c	320.91±11.57b
W_1O_0	13028.06±766.71a	16188.51±976.92ab	44.59±0.07ab	86.85±5.11b	344.11±11.57a
$W_1O_{0.8}$	13365.02±145.24a	16798.38±181.02a	44.31±0.01b	89.1±0.97b	363.05±1.363a
W_1O_1	13407.88±557.76a	16599.34±985.46a	44.68±0.78ab	89.39±3.72b	345.96±5.00a
$W_{0.8}O_{0.8}$	12974.63±447.65a	15014.6±516.04b	46.36±1.68ab	108.12±3.73a	352.36±10.26a
$W_{0.8}O_1$	13071.56±522.91a	14928.02±529.14b	46.68±1.5a	108.93±4.36a	358.69±1.39a

note: different letters in the same column indicate a significant difference ($p < 0.05$) among treatment.

Tables

639 Table 4. Root traits at the maturity stage.

Treatment	RW (g)	RCR (-)	NR (-)	NRT (-)	TRL (cm)	RD (cm)	ARD (mm)	MRD (mm)	MXRD (mm)	VR (cm^3)	SA (cm^2)
CK	139.60±32.58b	0.15±0.03c	77.67±17.62a	3562.67±839.51b	7139.18±734.85f	49.72±6.95b	1.56±0.33a	1.18±0.24b	13.94±5.07a	79.85±5.01c	2321.38±290.96c
W_1O_0	241.11±83.4a	0.25±0.07b	75.67±20.4a	4404±1317.13ab	9063.72±1670.07e	51.56±7.63b	1.78±0.46a	1.42±0.39ab	14.94±5.59a	88.03±7.28c	2805.94±387.76c
$W_3O_{0.8}$	278.56±61.22a	0.28±0.06a	82.33±15.31a	5269.67±1123.25ab	18768.51±933.64b	71.1±4.17a	2.05±0.12a	1.6±0.12ab	14.69±2.79a	308.7±21.17ab	5056.81±209.17a
W_1O_1	243.59±18.51a	0.24±0.01b	82.33±5.77a	6072.33±795.13a	21595.05±557.14a	75.02±1.5a	2.04±0.21a	1.57±0.16ab	20.33±8.21a	316.54±19.03a	5108.71±241.33a
$W_{0.8}O_{0.8}$	256.67±53.74a	0.28±0.06a	81.33±3.51a	5039.67±711.14ab	14657.73±6014d	66.9±7.27a	2.18±0.48a	1.77±0.33a	15.64±4.65a	273.13±32.94b	4197.35±439.46b
$W_{0.8}O_1$	251.34±79.98a	0.25±0.05b	83.67±12.01a	4948.33±978.64ab	16465.29±5702.86c	68.26±2.16a	2.15±0.24a	1.68±0.22ab	14.35±3.16a	293.22±18.88ab	4497.35±568.85ab

640 note: different letters in the same column indicate a significant difference ($p < 0.05$) among treatment.

Tables

Table 4 ET in the vegetative, concurrent, reproductive, and entire growth stages of wheat under different treatments in 2021, 2022, and 2023.

Treatment	2021				2022				2023			
	Vegetative growth	Concurrent growth	Reproductive growth	Entire growth	Vegetative growth	Concurrent growth	Reproductive growth	Entire growth	Vegetative growth	Concurrent growth	Reproductive growth	Entire growth
N100	98.2a	101.3c	128.3c	327.8c	109.8a	110.4d	140.8d	361.0d	90.7a	114.3d	129.2c	334.2d
M1N85	90.8bc	109.5b	130.8c	331.0c	103.3b	118.1c	141.9d	363.3d	84.5b	124.3c	129.4c	338.3d
M1N70	89.6c	108.5b	134.3c	332.4c	100.8bc	117.6c	142.2d	360.8d	82.0bc	122.1c	132.3c	336.4d
M2N85	93.6b	116.0a	149.3ab	358.9a	102.3b	121.5bc	154.0b	377.8b	84.7b	126.2bc	139.7b	350.6c
M2N70	91.4bc	108.3b	145.5b	345.3b	100.8b	122.0bc	150.7c	373.5c	81.8bc	126.7bc	140.0b	348.4c
M3N85	88.7cd	116.3a	149.6ab	354.5a	98.2cd	130.5a	158.8a	387.4a	80.1c	129.8b	146.7a	356.2b
M3N70	86.6d	114.3a	153.0a	353.9a	96.1d	125.1b	153.7b	374.9c	80.1c	135.4a	148.8a	364.4a

Tables

Table 1: Cultural Practices for sugarcane and wheat

S.N.	Activity		Sugarcane		Wheat	
			2020-21	2021-22	2022-23	2023-24
1	Ploughing		10/08/2020	-	15/11/2022	15/11/2023
2	Harrowing		15/08/2020	-	17/11/2022	19/11/2023
3	Transplanting/Sowing		18/08/2020	-	18/11/2022	25/11/2023
4	Fertilizers application	Basal dose	18/08/2020	01/01/2022-18/01/2022	18/11/2022	25/11/2023
		Top dressing	25/10/2020, 24/02/2021	01/03/2022, 06/04/2022	15/12/2022	17/12/2023
5	Hand weeding		02/01/2021, 16/02/2021, 05/03/2021	15/02/2022, 20/03/2022, 28/04/2022	06/12/2022	13/12/2023
6	Harvesting		31/12/2021-18/01/2022	07/11/2022-15/11/2022	10/04/2023-13/04/2023	17/04/2024-20/04/2024
7	Threshing		-	-	16/04/2023	23/04/2024

2.4.2 Irrigation Scheduling

Irrigation scheduling is a crucial process in agricultural practices, involving determining optin

Table 3: Soil textural classification in Gadarjudda minor command area

Soil Layer (cm)	Textural Classification (%)			pH	% Moisture content at		Bulk Density (g/cc)
	Sand	Silt	Clay		FC (v/v)	PWP (v/v)	
0-30	46.57	41.45	11.98	7.72	24.45	14.56	1.54
30-60	50.5	37.3	12.2	7.68	24	13.7	1.54
60-90	45.1	35.5	19.4	7.83	22.1	12.7	1.53
90-120	48.3	30	21.7	7.69	20.2	10.1	1.53
120-150	45.3	32.5	22.2	7.61	23	10	1.54

3.3 Irrigation in Sugarcane Crop

The comparison of flood and drip irrigation practices for sugarcane crops during the 2020–21 and 2021–

Discussion

Most important section!

What do the results mean?

Make the discussion correspond to the results

Compare your own results with published work

What is the ‘bigger picture’?

Go beyond your results

Discussion

100-seed weight and internode length of LD14 were lower than that of LD21.

4. Disscussion

4.1. Root morphological characteristics and distributions

Plant roots are the dominant organs for transporting water and diverse nutrients from soil to up-ground shoot. Changes in root system architecture such as root length, root surface area, root volume, and root diameter are common for drought resistance plant under arid and semi-arid regions (Ahmadi et al., 2018; Romero et al., 2025). Previous studies have shown that root morphological characteristics such as root length and root volume, significantly affect pod yield at harvest due to water deficiency (Boontang et al., 2010; Junjittakarn et al., 2014). Wang et al., (2010) proposed that drought stress had caused different degrees of damage to root, but the morphological change of the drought-sensitive variety was more obvious and more severe. Similarly, irrigation increased the total root length, total root surface area and yield of two

Discussion

reflects the water scarcity situation in irrigated agriculture in arid and semi-arid regions.

(a) Drought-tolerant crops (maize) (b) Interbasin water transfer (c) Sprinkler irrigation

Fig. 8 Planning of agricultural structure and water resources in the Shiyang River Basin.

4.2 Future characteristics of agricultural water scarcity

24

Conclusions

commercialization. This conclusion is consistent with the research findings by (yele et al., 2021; Berhan et al., 2023).

5. Conclusion and policy implications

Using primary data collected from 422 sample households, the study's overall goals were to investigate the degree of irrigated wheat commercialization and its determinants in central Ethiopia. Specifically, the study sought to identify factors that influence irrigated wheat commercialization and measure the level of commercialization. The degree of irrigated wheat commercialization in the research area was measured using the Household Commercialization Index (HCI), and a representative sample was obtained using a multi-stage random sampling

Conclusions

5. Conclusion and policy implications

Using primary data collected from 422 sample households, the study's overall goals were to investigate the degree of irrigated wheat commercialization and its determinants in central Ethiopia. Specifically, the study sought to identify factors that influence irrigated wheat commercialization and measure the level of commercialization. The degree of irrigated wheat commercialization in the research area was measured using the Household Commercialization Index (HCI), and a representative sample was obtained using a multi-stage random sampling technique. The HCI's findings showed that farm households' levels of market participation varied, with 10% classified as subsistence farmers, 46% as semi-commercial producers, and the remaining 44% as commercial producers. The majority of respondents were classified as semi-commercial, with a mean commercialization level of 49%.

The Tobit model's findings showed that irrigated wheat commercialization was positively and significantly affected by age, sex, farm size, fertilizer use, credit, extension contact, livestock holdings, and market information. On the other hand, it was discovered that commercialization was adversely and significantly affected by household size and the distance to the closest market. The government should support elderly people and households led by males, according to the study's conclusions. Extension agents should also provide farm households with expert and useful guidance to improve their commercialization efforts. For farmers, it is also critical to expand market accessibility, make it easier to use technology to obtain market data, and guarantee a timely supply of sufficient fertilizer at reasonable pricing. To improve the availability of wheat to the market and raise the standard of living for farmers in the area, stakeholders should generally put intervention methods into place that encourage the commercialization of irrigated wheat in the study area.

Conclusions

5. Conclusions

This study comprehensively evaluated WUE through a four-year field investigation on sugarcane and wheat crops in farmers' fields within the UGC command area. The research compared the effectiveness of micro-irrigation techniques with traditional flood irrigation practices, focusing on optimizing resource utilization and enhancing agricultural productivity.

The findings demonstrate that adopting micro-irrigation significantly improves WUE, reduces water consumption, and enhances crop productivity. Drip irrigation was particularly effective, improving FWUE and achieving higher water productivity by delivering more crop output per unit of water used. Similarly, sprinkler irrigation provided substantial benefits, increasing FWUE and supporting more efficient water use in wheat cultivation. These systems proved pivotal in addressing the water needs of sugarcane and wheat, which dominate the agricultural landscape in the region. Furthermore, implementing micro-irrigation systems at the minor canal level demonstrated transformative potential, with the capacity to expand the irrigated command area by 43% for wheat and 67% for sugarcane within the same water allocation, highlighting their scalability and impact on sustainable water resource management.

Micro-irrigation systems promote sustainable agricultural practices by conserving water and enabling irrigation over larger areas. These outcomes align with Sustainable Development Goal (SDG) 6.4, which emphasizes improving water use efficiency and sustainable water management. Recognizing these advantages, the Government of India actively promotes micro-irrigation through subsidies and incentives, positioning it as a vital strategy to combat water scarcity and ensure agricultural sustainability.

Conclusions

5. Conclusion

This study reveals that net radiation is a key factor governing the transpiration water consumption of *H. ammodendron*. Under high - temperature and drought stress, *H. ammodendron* reduces the number of branches and assimilating branches to decrease transpiration water consumption and maintain its survival. However, this self - protection mode reduces the crown width, leading to intensified wind erosion in the forest land and damage to the surface crust. The sand - wind flow causes the shallow roots of *H. ammodendron* to be lifted and exposed on the surface. The water obtained by the shallow roots is an important supplementary source for the growth of branches and assimilating branches. The damage to the shallow roots results in poor growth of *H. ammodendron*. In order to repair the shallow roots, *H. ammodendron* supplies water from some deep roots to the shallow roots, while its branches can only obtain less water, exacerbating the degradation. Therefore, based on the phenotypic and physiological characteristics of *H. ammodendron* at different degradation levels, targeted restoration strategies have been formulated. For example, on the premise of establishing sand barriers, the canopy of MID *H. ammodendron* is pruned, the poorly - growing secondary branches of MOD *H. ammodendron* are removed, and HD *H. ammodendron* is logged. These measures have effectively promoted the normal growth and survival of *H. ammodendron* under drought stress, and are of great significance for global desertification control and ecological protection in arid regions.

Acknowledgements

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455 **8. Acknowledgments**

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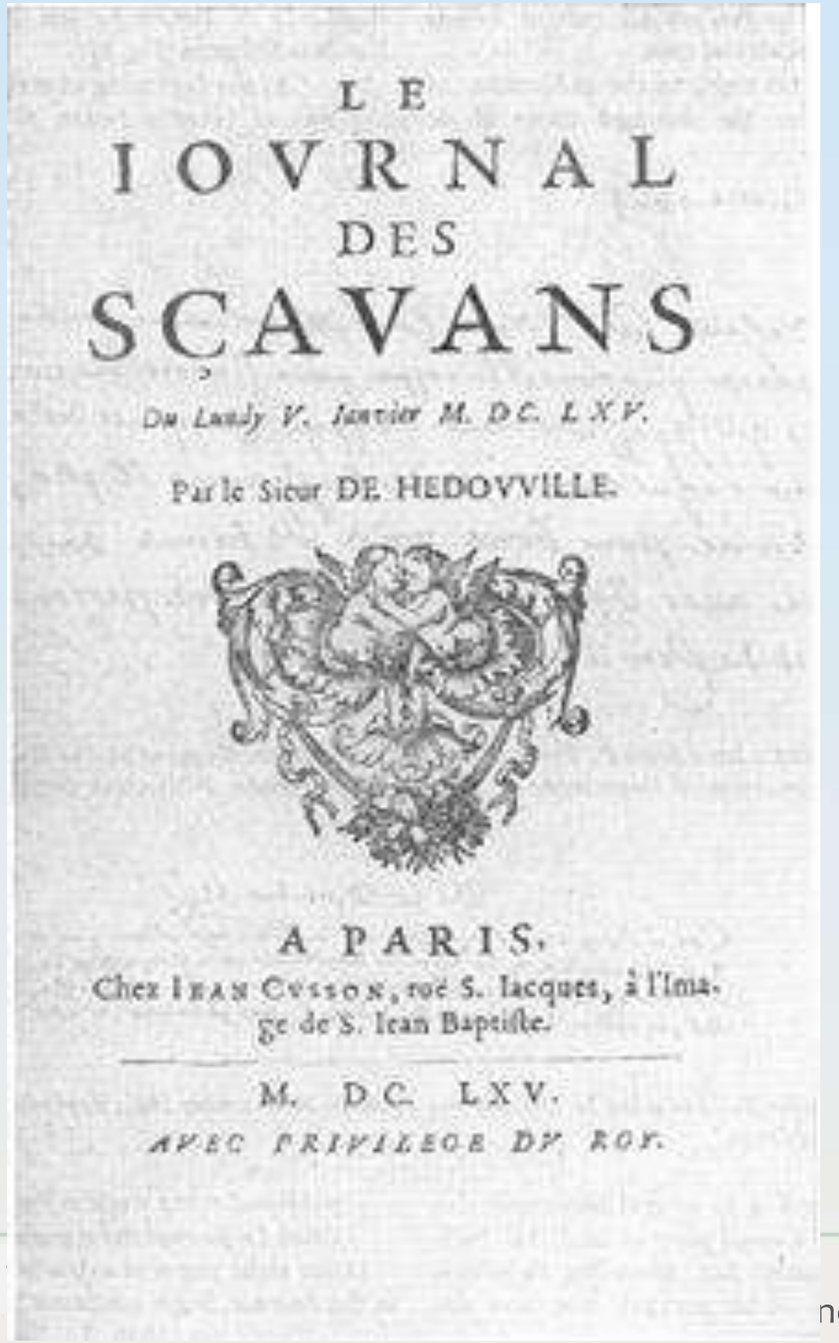

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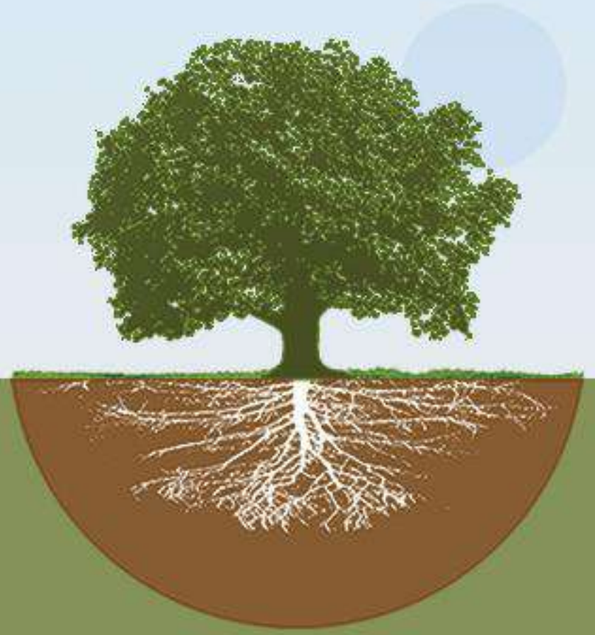
Tables & Figures

J.E. (Enrique) Fernández



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Good tables and figures,

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- Diagrams

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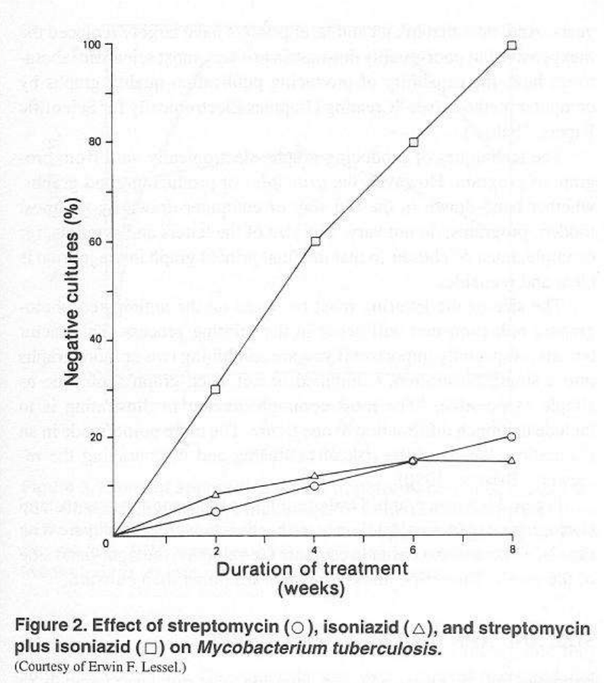


Figure 2. Effect of streptomycin (○), isoniazid (△), and streptomycin plus isoniazid (□) on *Mycobacterium tuberculosis.*
(Courtesy of Erwin F. Lessel.)

Table 9. Effect of streptomycin, isoniazid, and streptomycin plus isoniazid on *Mycobacterium tuberculosis*[a]

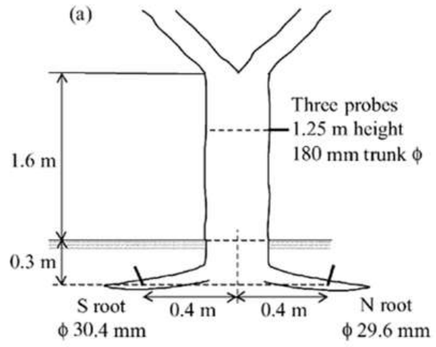
Treatment[b]	Percentage of negative cultures at:			
	2 wk	4 wk	6 wk	8 wk
Streptomycin	5	10	15	20
Isoniazid	8	12	15	15
Streptomycin + isoniazid	30	60	80	100

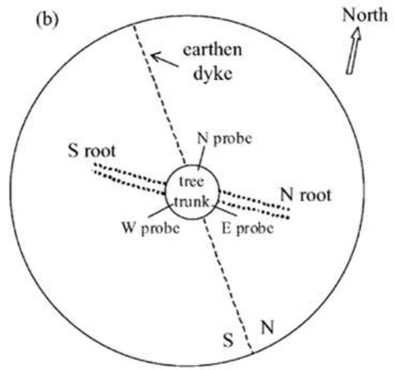
[a]The patient population, now somewhat less so, was described in a preceding paper (61).
[b]Highest quality available from our supplier (Town Pharmacy, Podunk, IA).

Fuente: *How to Write & Publish a Scientific Paper*. Robert A. Day, 1998.

¿Table or figure?

They are useful to show information that, if in the text, will make it dense and difficult to read.





Pond of 2.5 m radius

Fig. 2. Probe location in the tree of the field experiment 2 (a) and orientation of both the probes in the trunk and the instrumented roots, as well as of the dyke used for differential irrigation of each side of the tree (b).

Table 1. Details of the excision and perfusion experiments. Potential evapotranspiration (ET_o) was estimated with the FAO56 Penman-Monteith equation from meteorological measurements taken locally. Leaf water potentials are mean values for 16 leaves distributed around the canopy, measured at predawn (Ψ_{pd}) and noon (Ψ_{md}). Leaf area (LA, one side) of the trees and the sapwood area were estimated as described in the text. Abbreviation: DOY = day of year.

Experiment	*Olea europaea* 'Manzanilla'	*Prunus domestica* 'Songal'	*Citrus sinensis* 'Cadenero'
Excision experiment	DOY 111	DOY 167	DOY 175
Daily ET_o (mm)	3.9	6.8	6.5
Ψ_{pd} (MPa)	−0.19	−0.17	−0.11
Ψ_{md} (MPa)	−1.07	−0.58	−0.79
Tree age (year)	15	5	16
Tree height (m)	2.60	2.18	3.2
Canopy diameter (m)	2.50	1.65	3.5
LA (m^2)	12.76	16.41	28.71
Xylem radius[1] (mm)	49	35	52
Height of measurement[2] (m)	0.77	0.40	0.80
Sapwood area (m^2)	0.00572	0.00334	0.00795
Perfusion experiment	DOY 89	DOY 128	DOY 106
Length of trunk section (m)	0.3	0.3	0.3
Xylem radius[1] (mm)	41	40	39
Sapwood area (m^2)	0.00449	0.00410	0.00481
Height of measurement[2] (m)	0.80	0.40	0.40

[1] Radius of the trunk without the bark at the probe locations.
[2] Mean height above the ground of the portion of the trunk where the probes were located, measured before cutting each tree.

¿Table or figure?

Photographs: use them to show relevant details or part of the results (histological sections, microorganisms, symptoms, etc.).

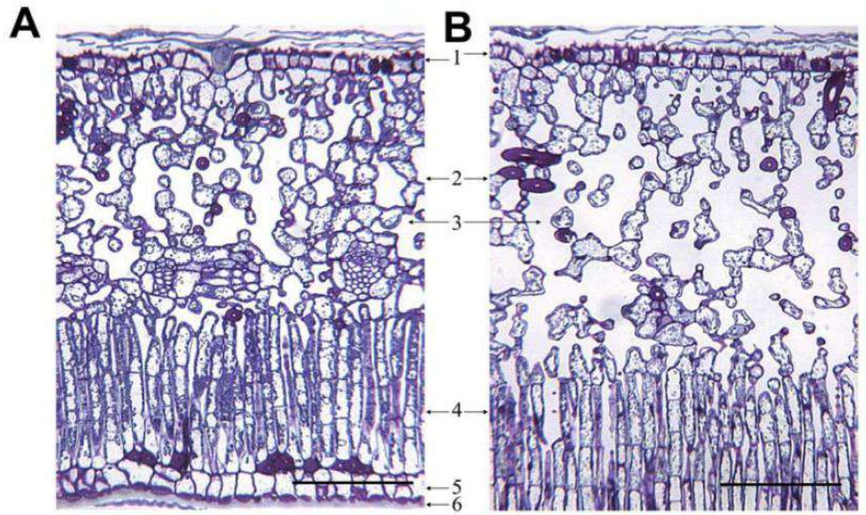
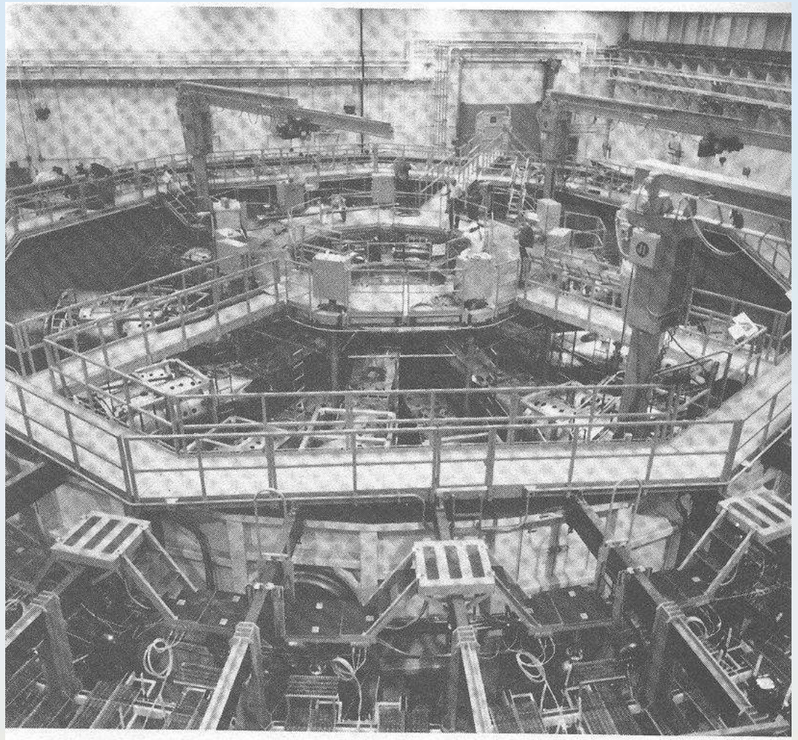
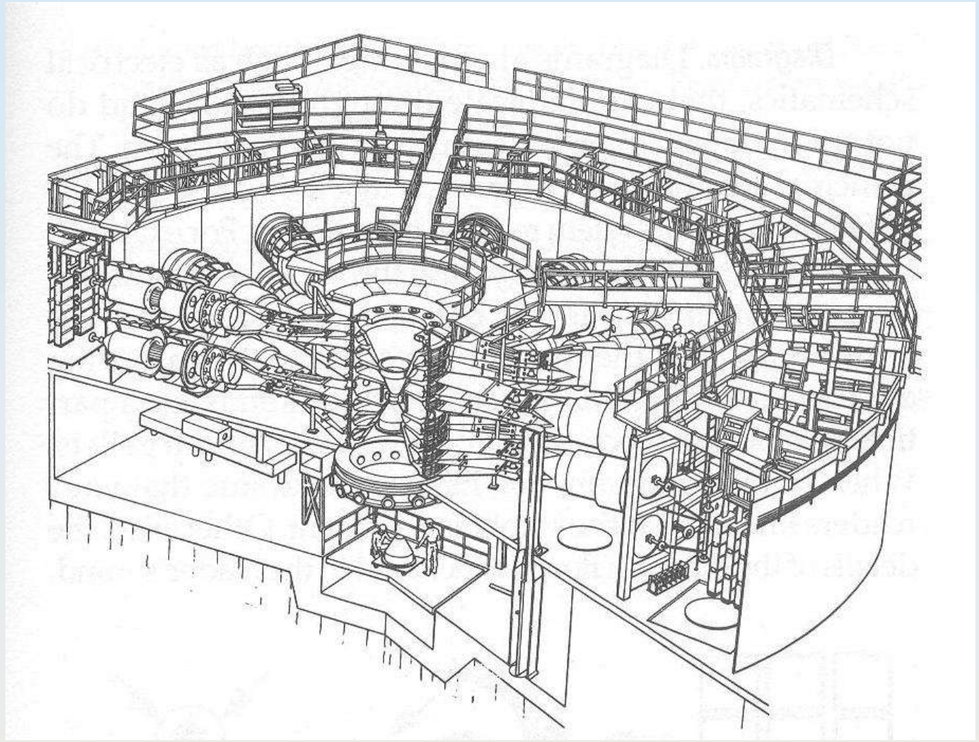


Fig. 6. Typical images of cross-sections performed on olive leaves under well-watered conditions (A; state I) and severe water stress (B; state III); bar = 100 μm. (1) Lower epidermis, (2) spongy mesophyll, (3) air space, (4) palisade mesophyll, (5) upper epidermis, (6) cuticle.
401x247mm (150 x 150 DPI)

¿Table or figure?

Drawings can be more useful tan photographs. You can use them to illustrate details that the photo does not show.





Fuente: *The Craft of Scientific Writing*. Michael Alley, 1996.

¿Table or figure?

Diagrams are useful to explain processess, systems, facilities, etc.

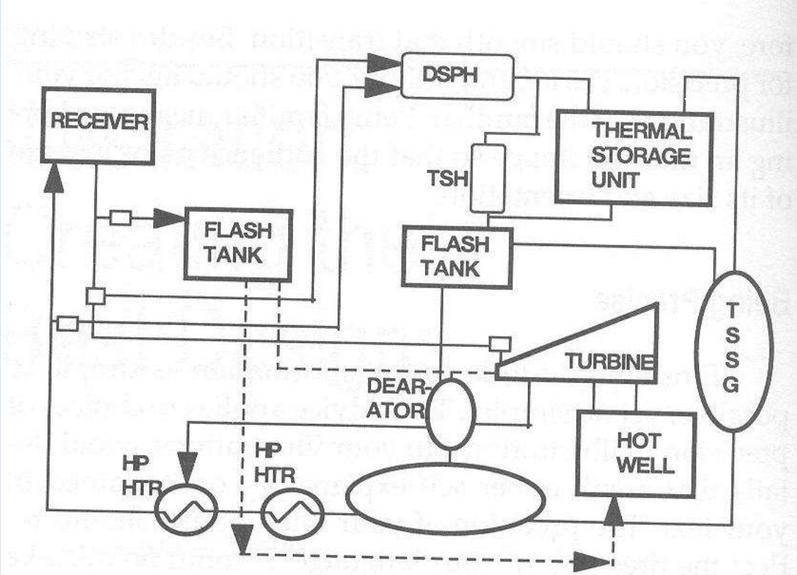


Figure 11-1. Thermal storage system schematic (this schematic is too detailed for the accompanying text).

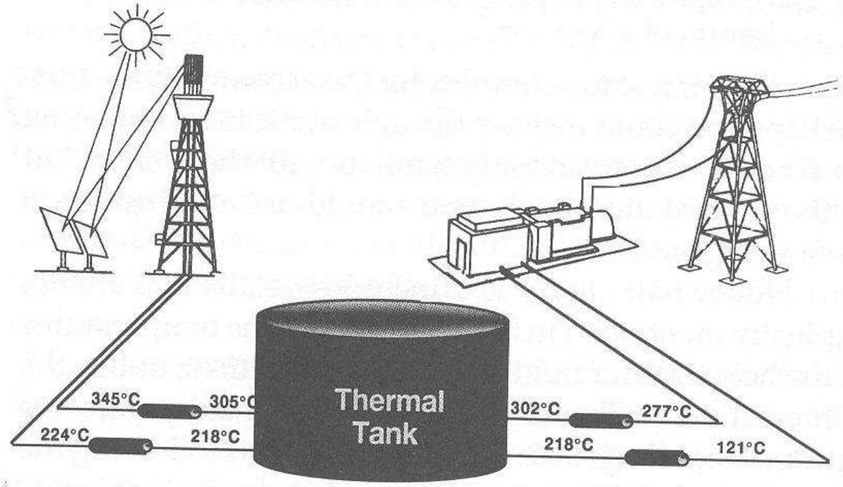


Figure 11-2. Thermal storage system drawing [Radosevich, 1986]. This drawing matches the precision in the accompanying text.

Source: *The Craft of Scientific Writing*. Michael Alley, 1996.

To take into account when doing tables and figures

- Symbols and abbreviations must be defined in the first table or figure. For the rest, mention *Abbreviations as in Table 1*, or similar.
- Use widely accepted symbols, abbreviations and units. Consult the SI system, Manuals, the Guide for Authors…
- Be careful with the use of exponents.
- The position of each table or figure must be shown in the manuscript.
- Data can be displayed in the text, in a table or in a figure, but never in more tan one of these ways. However, you can discuss in the text the most relevant data shown in a table or in a figure.

To take into account when doing tables and figures

Mistakes cause a poor impression on the quality of your work

Table 2 Montly and seasonal values (mean ± standard error) of leaf area (LA, $n = 4$), trunk diameter (TD, $n = 6$), longitudinal diameter of the fruit (FD, $n = 80$), and fruit ($n = 4$) and oil yield (n = 4), for each irrigation treatment. Different letters indicate statistically significant difference ($P < 0.05$) between treatments

Treatment	Month	LA (m2 tree^{-1})	TD (mm)	FD (mm)	Yield (kg fruit ha^{-1})	Yield (kg oil ha^{-1})
Control	June	4.0 ± 0.2a	47.7 ± 1.1a	11.95 ± 0.72a		
	July	6.3 ± 0.0a	48.2 ± 1.1a	13.02 ± 1.27a		
	August	7.2 ± 0.4a	50.1 ± 1.3a	13.44 ± 1.29a		
	September	9.5 ± 0.2a	50.8 ± 1.6a	14.23 ± 1.17a		
	October		51.1 ± 1.7a	15.38 ± 1.31a	15609.8± 3.5a	991.2 ± 3.5a
60RDI	June	4.2 ± 0.4a	46.6 ± 1.2a	12.60 ± 1.12a		
	July	5.7 ± 0.5a	46.1 ± 1.5a	12.42 ± 0.97b		
	August	5.8 ± 0.3ab	46.6 ± 1.3a	12.85 ± 1.09b		
	September	7.0 ± 0.4b	47.3 ± 1.3a	13.92 ± 1.13a		
	October		47.8 ± 1.3a	14.94 ± 1.23a	12077.0 ± 3.4a	1132,8 ± 3.6a
30RDI	June	3.7 ± 0.5a	49.2 ± 1.8a	12.54 ± 0.89a		
	July	5.8 ± 0.4a	48.4 ± 2.0a	12.15 ± 0.96b		
	August	5.1 ± 0.5b	48.3 ± 1.9a	12.14 ± 1.04c		
	September	5.7 ± 0.5b	49.0 ± 1.8a	13.06 ± 1.38b		
	October		48.9 ± 1.9a	13.84 ± 1.64b	8747.8 ± 2.6b	629.0 ± 2.7b

To take into account when doing tables and figures

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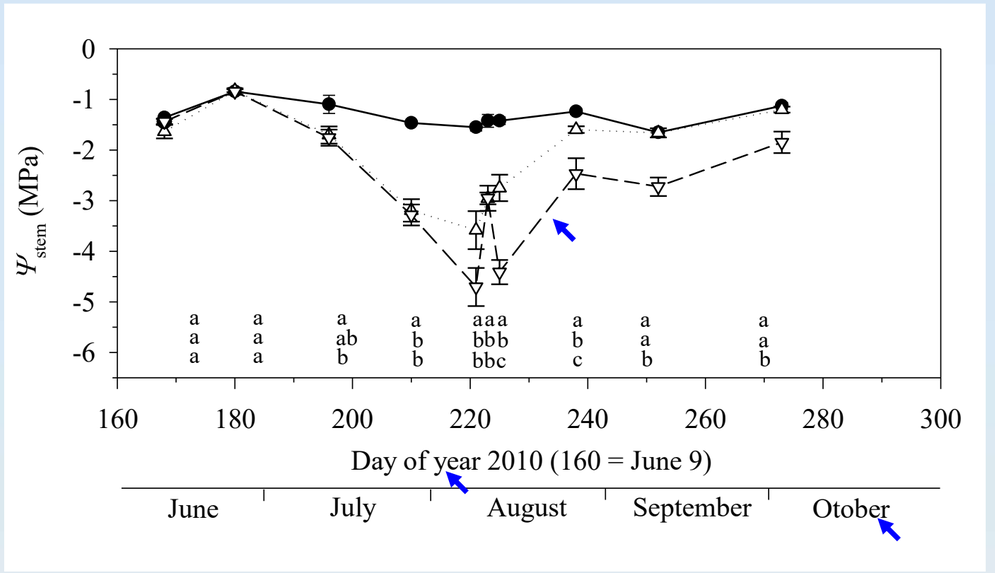

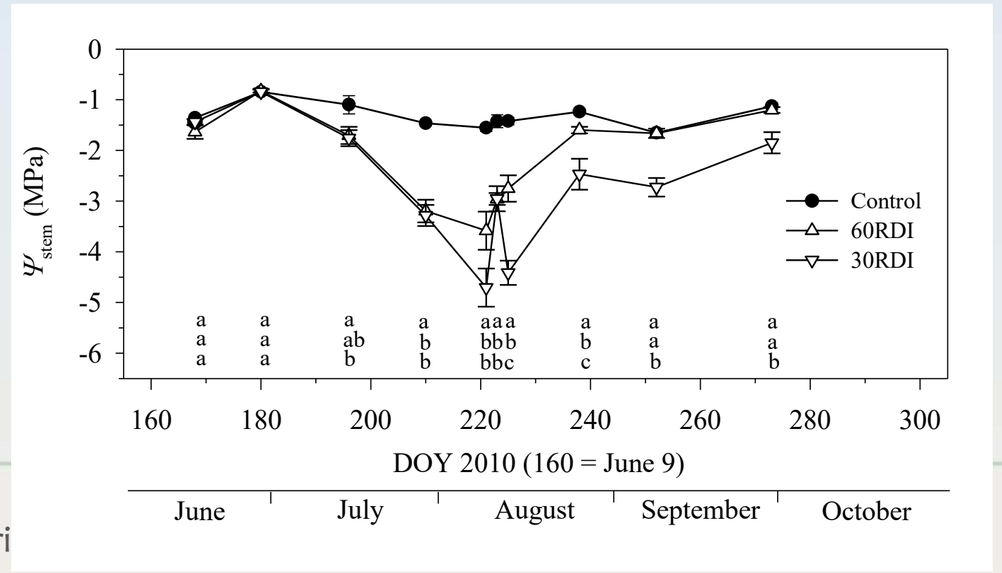

To take into account when doing tables and figures

Tables and figures must be clear and easy to read: make it easy for the reader

Table 3. Reference equations obtained in grapevines and fruit trees of various species. For simplicity, coefficients of the curvilinear relationships are not shown. Missing slope and intercept values mean either they were not given by the authors or represent a non-significant relationship. See "List of symbols and abbreviations" for the meaning of the coefficients and variables shown.

Crop	Period	Related variables	r^2 or R^2	Slope	Intercept	Fitting model	Reference
6-year-old almond trees	Growing season	MDSvsET$_o$	0.46	0.036	-0.127	linear	Goldhamer and Fereres (2001)
	" "	MDS vs md D_a	0.63	0.067	0.012	"	
4-year-old almond trees.	Growing season	MDSvsmd D_a	0.64	0.054	-0.019	linear	Fereres and Goldhamer (2003)
Irrigation above ET$_c$.	" "	MDSvsmx D_a	0.58	0.034	-0.025	"	
	" "	MDSvsmd T_a	0.59	0.008	-0.112	"	
	" "	MDSvsmx T_a	0.54	0.007	-0.143	"	
	" "	MDSvsET$_o$	0.63			exponential	
4-year-old almond trees. Irrigation at 120% ET$_c$.	Growing season	MDSvsET$_o$	0.48	22.7	25.2	linear	Nortes et al. (2005)
5-year-old plum trees.	Fruit growth	MDSvsΨ_{stem}	0.89	-325.68	-98.7	linear	Intrigliolo and Castel (2004)
	Early post-harvest	" "	0.72	-224.02	-75.9	"	
	Late post-harvest	" "	0.52	-130.96	-10.8	"	
5-year-old olive trees.	Growing season	TGRvsmd T_a	0.77			peak function	Pérez-López et al. (2008)
Fruiting year.	" "	TGRvsmx T_a	0.75			"	
Irrigated at 100% ET$_c$							
4-year-old peach trees.	July	MDSvsmd T_a	0.71	0.07	-1.46	linear	Conejero et al. (2007b)
Irrigated at 128% ET$_c$.	August-October	" "	0.53	0.02	-0.08	"	
	July	MDSvsmx T_a	0.79	0.05	-1.07	"	
	August-October	" "	0.72	0.02	-0.19	"	
	Growing season	MDSvsmd D_a	0.49	0.16	0.10	"	
	" "	MDSvsmx D_a	0.51	0.09	0.12	"	

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4-year-old almond trees. Irrigation above ET_c.	Growing season	MDS vs md D_a	0.64	0.054	-0.019	linear	Fereres and Goldhamer (2003)
	" "	MDS vs mx D_a	0.58	0.034	-0.025	"	
	" "	MDS vs md T_a	0.59	0.008	-0.112	"	
	" "	MDS vs mx T_a	0.54	0.007	-0.143	"	
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4-year-old peach trees. Irrigated at 128% ET_c.	July	MDS vs md T_a	0.71	0.07	-1.46	linear	Conejero et al. (2007b)
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To take into account when doing tables and figures

Tables and figures must stand alone, i.e. the reader must fully understand them without consulting the text. Still, avoid including too many explanations (fluency is important in any part of the paper).

Table 3 Signal intensity (S_I, %), coefficient of variation (CV, %) and sensitivity of the daily difference between the average transpiration (E_p) in each regulated deficit irrigation (RDI) treatment minus the average E_p in the control treatment (D_{Ep}), and of the daily difference between the average maximum trunk diameter (MXTD) values in each RDI treatment minus the average MXTD in the control treatment (D_{MXTD}). Values were calculated for each of the two RDI treatments. E_p and MXTD values are the average of three replicates. See text for details on the measurements and treatments

	D_{Ep}		D_{MXTD}	
	60RDI	30RDI	60RDI	30RDI
S_I	-77	-222	-145	-218
CV	36	21	5	6
Sensitivity	-2.0	-10.7	-29.9	-37.9

To take into account when doing tables and figures

Tables and figures must stand alone, i.e. the reader must fully understand them without consulting the text. Still, avoid including too many explanations (fluency is important in any part of the paper).

Table 3. Concentrations of main nutrients in leaves from trees under the three studied water treatments. These results correspond to the leaf samples taken in July 2012. Results from the 2010 and 2011 analyses also showed all the values to be within the optimum levels range.

Element (unit)	FI	60RDI	30RDI	Optimum levels*
N (%)	1.74	1.79	1.82	1.5-2.0
P (%)	0.20	0.18	0.17	0.1-0.3
K (%)	1.1	1.1	1.0	>0.8
Ca (%)	1.0	1.0	1.0	>1
Mg (%)	0.15	0.15	0.16	>0.1
Mn (ppm)	23	24	57	>20
Zn (ppm)	8.4	9.8	8.5	>10
Cu (ppm)	25	27	17	>4
B (ppm)	28	28	25	19-150
Na (%)	0.1	0.1	0.1	toxic over 0.2

* After Chapman (1966), Childers (1966) and Beutel et al. (1983). Cited by Fernández-Escobar (2001).

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Tables and figures must stand alone, i.e. the reader must fully understand them without consulting the text. Still, avoid including too many explanations (fluency is important in any part of the paper).

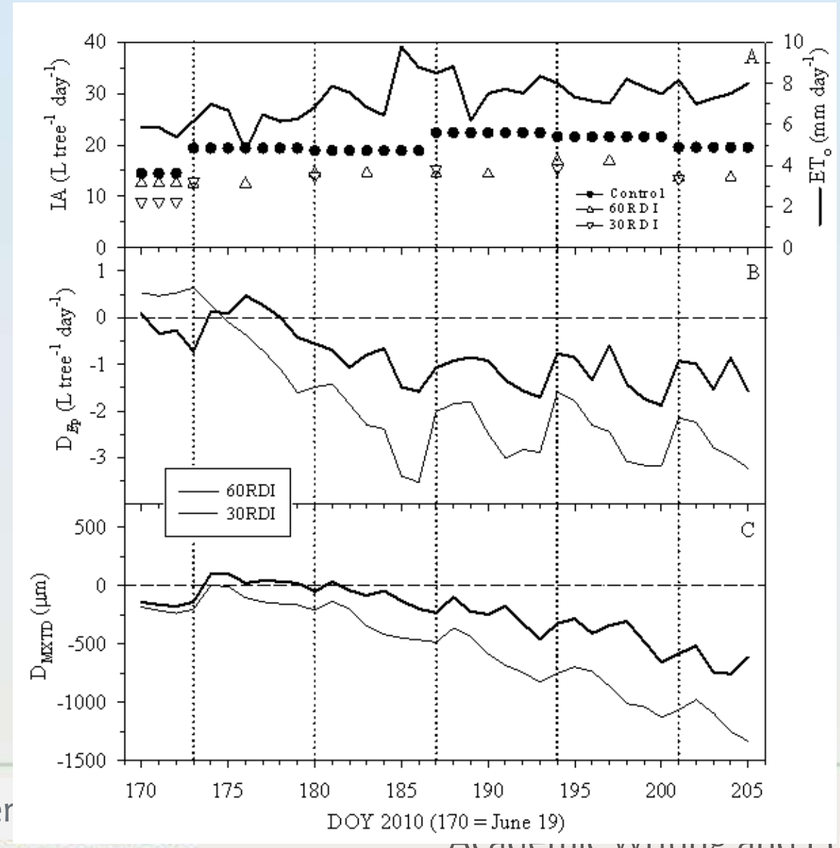


Fig. 6 Time course of (A) the FAO56 Penman-Monteith potential evapotranspiration (ET_o) and irrigation amounts (IA) supplied to the trees of each treatment, (B) the daily difference between the average E_p values in each RDI treatment minus the average E_p values in the control treatment (D_{Ep}), and (C) the daily difference between the average maximum trunk diameter (MXTD) values in each RDI treatment minus the average MXTD values in the control treatment (D_{MXTD}). The E_p values were estimated from sap flow records. The shown values are the average of three trees per treatment recorded at the beginning of the water restriction period applied to the RDI treatments in midsummer. The dotted lines represent days on which the 30RDI trees were irrigated. DOY = day of year. See text for details on the measurements and treatments

To take into account when doing tables and figures

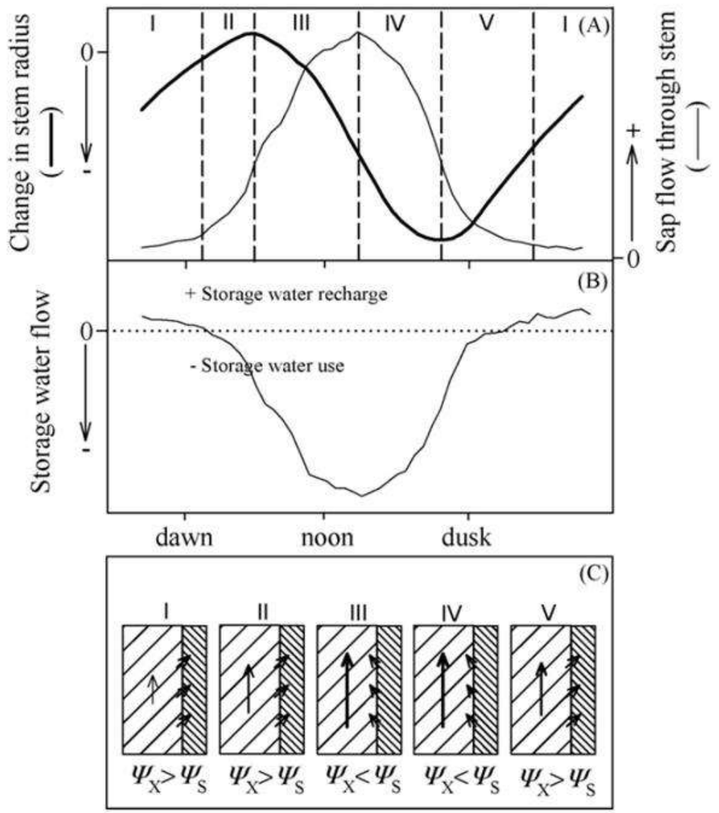
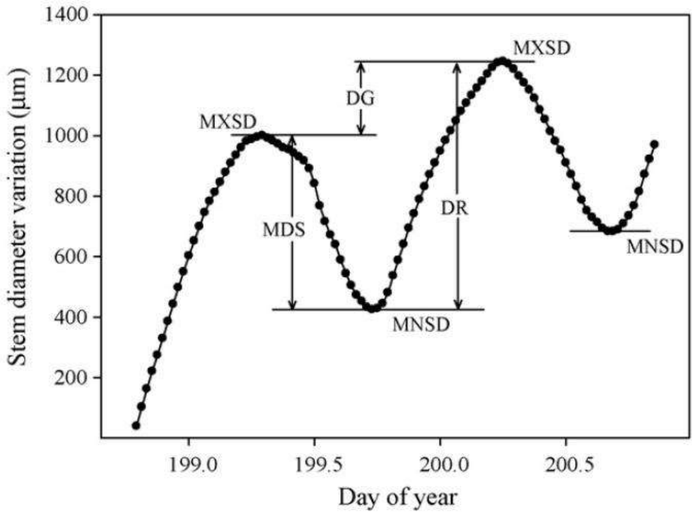


Fig. 1. Daily dynamics of sap flow and stem radius recorded by the authors on a bright day of high evaporative demand in the summer of 2006, in a 37-year-old olive tree (*Olea europaea* L.) (A). They are explained by considering five different phases (after Herzog et al., 1995): Phase I is the nocturnal period, in which there is a recharge of the storage water; sap flow is measurable for a certain time after sunset, then becomes negligible. Phase II is the lag between the rise in flow soon after sunrise and the maximum stem diameter recorded during the day. Phase III is the period of fast shrinkage of the stem until maximum sap-flow values occur. Phase IV is the lag between the maximum flow and the minimum stem diameter recorded during the day. Phase V is the period in which the stem swells and sap flow again becomes negligible. The idealised evolution of storage water is shown in Graph B (after Verbeeck et al., 2007a). Graph C illustrates the axial flow of sap in the stem and the exchange of water between the xylem and the storage tissues (cambium, phloem, living tissues of the bark) for the phases shown in Graph A; also shown are the corresponding variations in the water potential of the xylem (Ψ_X) as compared with that of the storage tissues (Ψ_S) (after Herzog et al., 1995).



MXSD = maximum stem diameter

MNSD = minimum stem diameter

MDS_{DOY} = maximum daily shrinkage = $MXSD_{DOY} - MNSD_{DOY}$

DR_{DOY} = daily recovery = $MXSD_{DOY+1} - MNSD_{DOY}$

DG_{DOY} = daily growth = $MXSD_{DOY+1} - MXSD_{DOY}$

SGR_{DOY} = stem growth rate = DG for N days = $MXSD_{DOY+1} - MXSD_{DOY-N}$

CG = cumulative growth, for N days = $\sum_{DOY-N}^{DOY} DG$

Fig. 2. SDV-derived indices. The plotted data were recorded by the authors with an LVDT sensor installed in the trunk of a 37-year-old 'Manzanilla de Sevilla' olive tree. DOY = day of year.

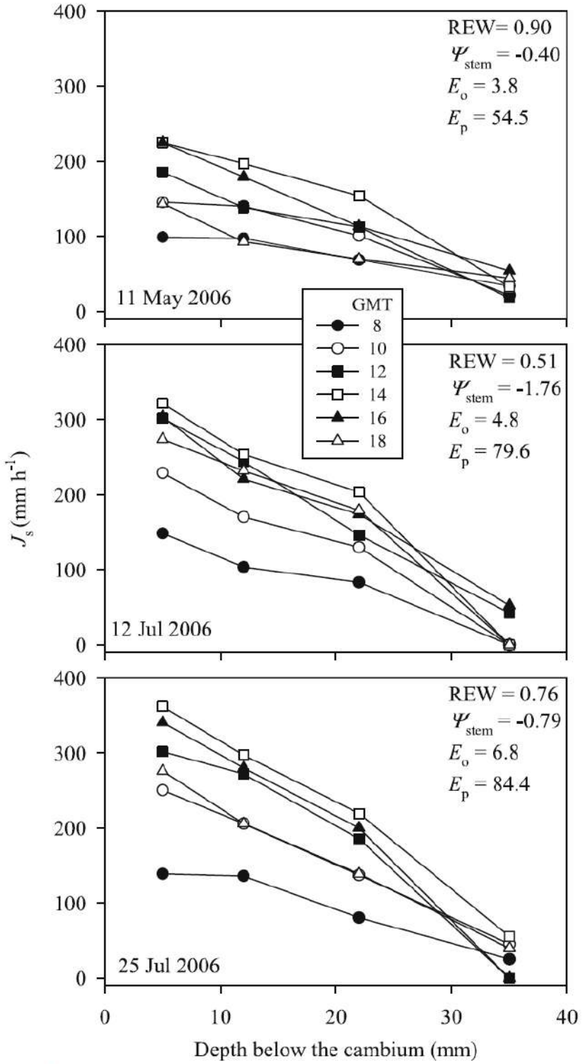
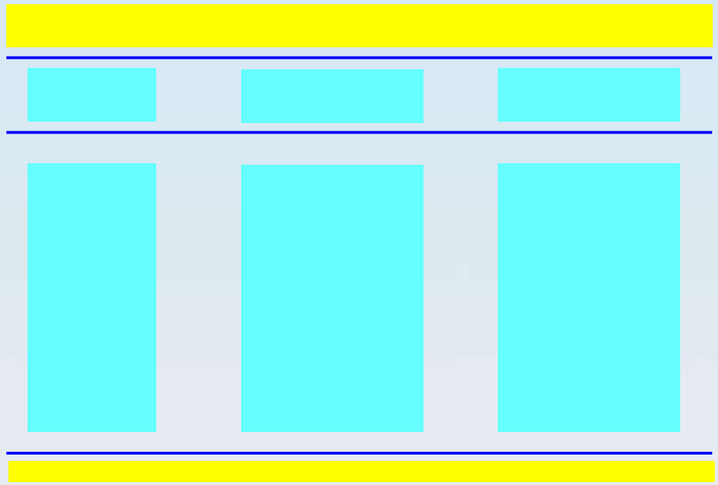


Fig. 2 Sap flow density (J_s) profiles measured in an olive tree on days with different soil and atmosphere water stress conditions. *REW* Relative extractable water; Ψ_{stem} stem water potential (MPa); E_o FAO56 Penman–Monteith grass reference evapotranspiration (mm day^{-1}), E_p tree water use (L day^{-1}) estimated from sap flow measurements, *GMT* Greenwich mean time. See text for details on the measurements

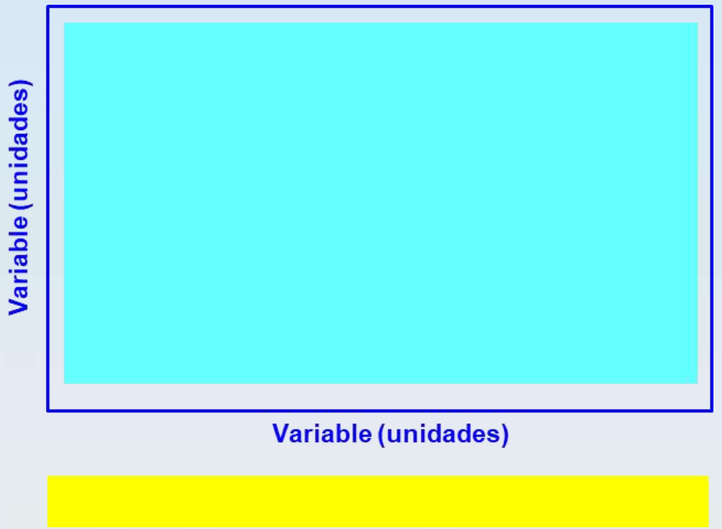
To take into account when doing tables and figures



Legend/caption

Lines

contents



To take into account when doing tables and figures

•**Caption:** a short title or description that accompanies a figure or table. It provides a concise explanation of what is being shown.

•**Legend:** a more detailed explanation, often included within or below the figure, that provides additional context, defines symbols, or explains abbreviations used in the figure.

Key differences:

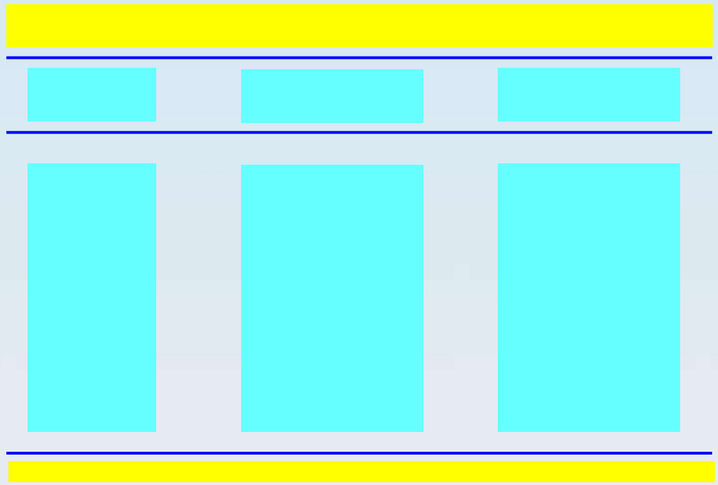
1.Placement:

1. Captions typically appear **below figures** and **above tables**.
2. Legends can be **inside the figure** (e.g., next to a graph to explain colors or symbols) or as part of the caption.

2.Content:

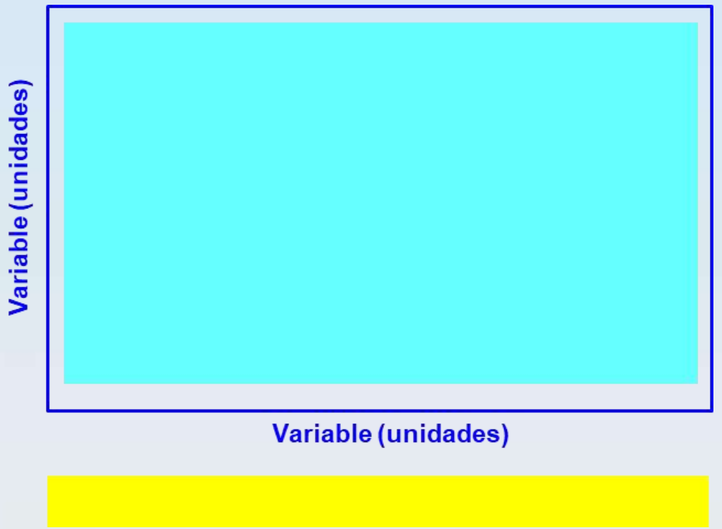
1. Captions summarize the overall figure or table.
2. Legends clarify specific elements **within** the figure (e.g., color codes, symbols, or experimental groups).

To take into account when doing tables and figures



Captions typically appear
below figures
and above tables.

Still, you can include notes
below a table



Tables

Tables include three horizontal lines from side to side (*horizontal rules*), and may include shorter horizontal lines (*straddle rules*).

They should not include vertical lines (*vertical rules*).

Table 8. Induction of creatinine deiminase in *C. neoformans* and *C. bacillisporus*

N source[a]	*C. neoformans* NIH 12		*C. bacillisporus* NIH 191	
	Total enzyme[b]	Sp act (U/mg of protein)	Total enzyme	Sp act (U/mg of protein)
Ammonia	0.58	0.32	0.50	0.28
Glutamic acid	5.36	1.48	2.18	0.61
Aspartic acid	2.72	0.15	1.47	0.06
Arginine	3.58	2.18	3.38	2.19
Creatinine	97.30	58.40	104.00	58.30

[a] The inoculum was grown in glucose broth with ammonium sulfate, washed twice, and then transferred into the media with the N sources listed below.
[b] Enzyme units in cell extract obtained from ca. 10^{10} cells.

Fuente: *How to Write & Publish a Scientific Paper*. Robert A. Day, 1998.

Tables

If the information can be shown in a clear and concise way in the text, do not make a table.

Table 1. Effect of aeration on growth of *Streptomyces coelicolor*

Temp (°C)	No. of expt	Aeration of growth medium	Growth[a]
24	5	+[b]	78
24	5	–	0

[a] As determined by optical density (Klett units).
[b] Symbols: +, 500-ml Erlenmeyer flasks were aerated by having a graduate student blow into the bottles for 15 min out of each hour; –, identical test conditions, except that the aeration was provided by an elderly professor.

"Aeration of the growth medium was essential for the growth of *Streptomyces coelicolor*. At room temperature (24°C), no growth was evident in stationary (unaerated) cultures, whereas substantial growth (OD, 78 Klett units) occurred in shaken cultures."

Fuente: *How to Write & Publish a Scientific Paper*. Robert A. Day, 1998.

Tables

If the information can be shown in a clear and concise way in the text, do not make a table.

Table 2. Maximum vessel length values determined by the air-infiltration and the silicone injection techniques. n = sample size. SE = standard error. * indicates statistical differences ($P < 0.001$).

	Air-infiltration $n = 20$	Silicone-injection $n = 6$
Maximum vessel length (m)	0.819 ± 0.015 SE	0.187 ± 0.004 SE*

The air-injection technique reported a maximum vessel length of 0.819 ± 0.015 m (n = 20) whereas the silicone-injection technique reported a maximum vessel length of 0.187 ± 0.004 m (n = 6). Differences were significant at the $P < 0.001$ level.

Fuente: *How to Write & Publish a Scientific Paper*. Robert A. Day, 1998.

Tables

Do not include unnecessary information in the table.

Table 2. Effect of temperature on growth of oak (*Quercus*) seedlings[a]

Temp (°C)	Growth in 48 h (mm)
−50	0
−40	0
−30	0
−20	0
−10	0
0	0
10	0
20	7
30	8
40	1
50	0
60	0
70	0
80	0
90	0
100	0

[a]Each individual seedling was maintained in an individual round pot, 10 cm in diameter and 100 m high, in a rich growth medium containing 50% Michigan peat and 50% dried horse manure. Actually, it wasn't "50% Michigan"; the peat was 100% "Michigan," all of it coming from that state. And the manure wasn't half-dried (50%); it was all dried. And, come to think about it, I should have said "50% dried manure (horse)"; I didn't dry the horse at all.

Fuente: *How to Write & Publish a Scientific Paper*. Robert A. Day, 1998.

" The oak seedlings grew at temperatures between 20 and 40 °C; no measurable growth occurred at temperatures below 20 °C or above 40 °C".

Tables

Show the data vertically, not horizontally.

234 467 309 318 219 326 405 292 374 209 416

234
467
309
318
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416

Tables

Table 6. Characteristics of antibiotic-producing *Streptomyces*

Determination	*S. fluoricolor*	*S. griseus*	*S. coelicolor*	*S. nocolor*
Optimal growth temp (°C)	–10	24	28	92
Color of mycelium	Tan	Gray	Red	Purple
Antibiotic produced	Fluoricil-linmycin	Strepto-mycin	Rhol-monde-lay[a]	Nomycin
Yield of antibiotic (mg/ml)	4,108	78	2	0

[a] Pronounced "Rumley" by the British.

Table 7. Characteristics of antibiotic-producing *Streptomyces*

Organism	Optimal growth temp (°C)	Color of mycelium	Antibiotic produced	Yield of antibiotic (mg/ml)
S. fluoricolor	–10	Tan	Fluoricillinmycin	4,108
S. griseus	24	Gray	Streptomycin	78
S. coelicolor	28	Red	Rholmondelay[a]	2
S. nocolor	92	Purple	Nomycin	0

[a] Where the flying fishes play.

Fuente: *How to Write & Publish a Scientific Paper*. Robert A. Day, 1998.

Tables

Columns with text must be aligned to the left.

Those with numbers, to the right or according to the decimal mark.

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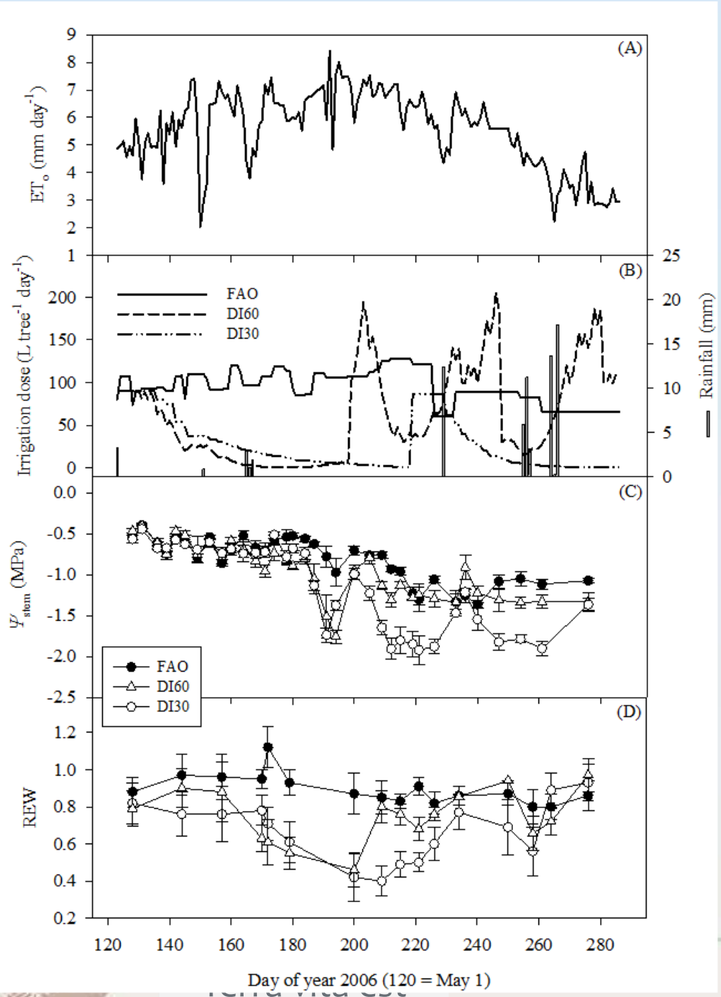
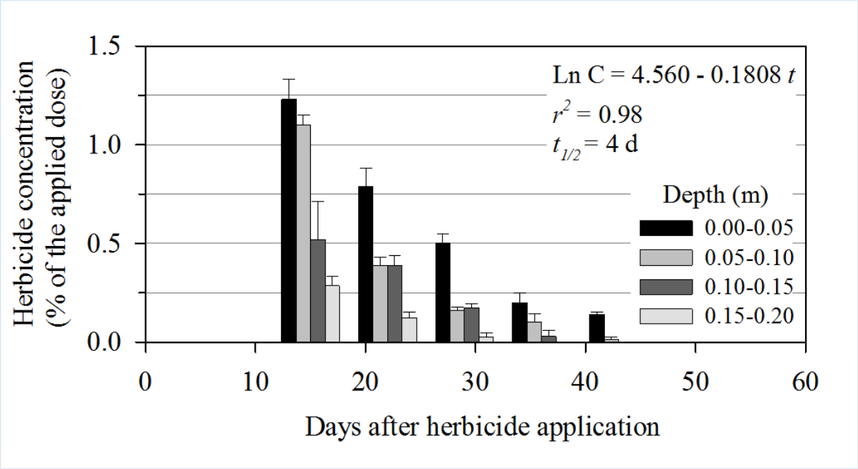
Figures

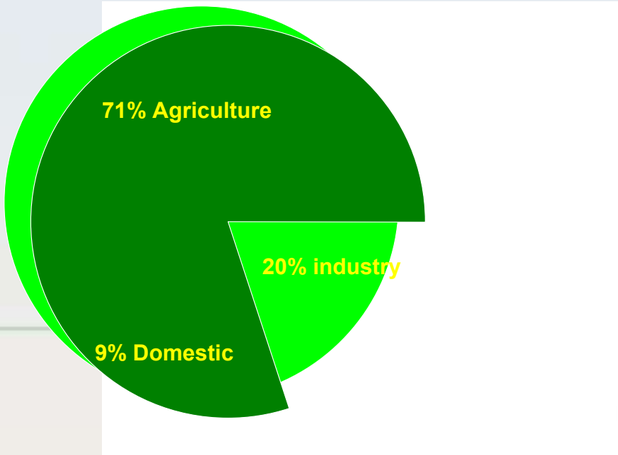
Line graphs: for trends and changes of the Y vs. X variable



Bar charts: to compare amounts, proportions, and to show the course of Y vs. X

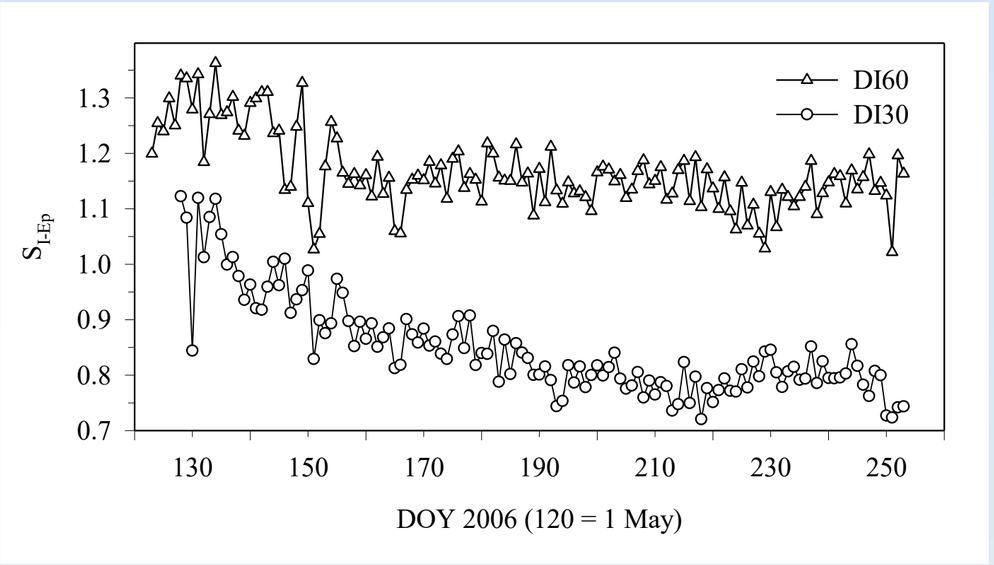


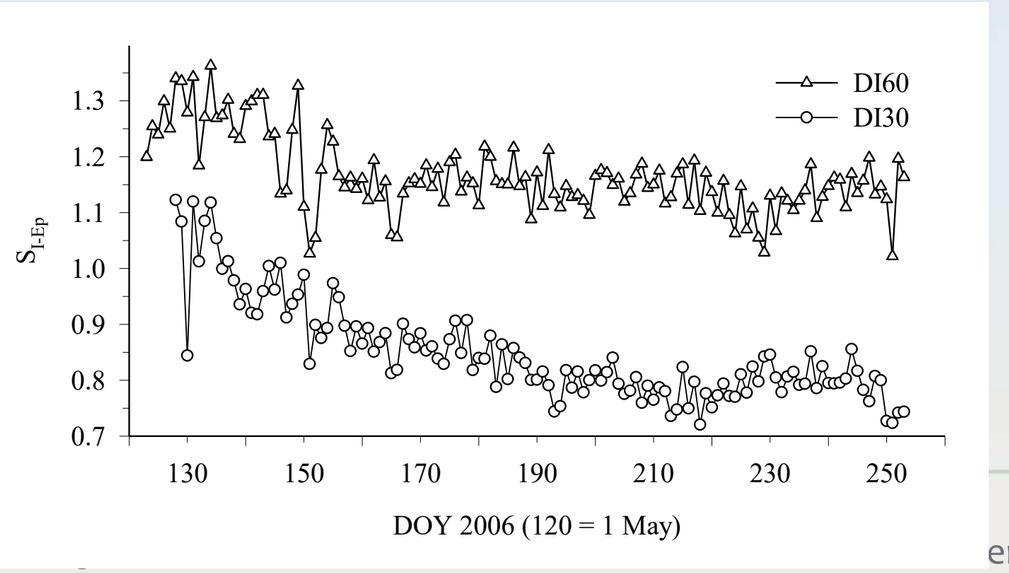
Pie *charts*: to compare proportions



Figures

Boxed figures (the four sides marked) are preferred to *two-sided figures.*



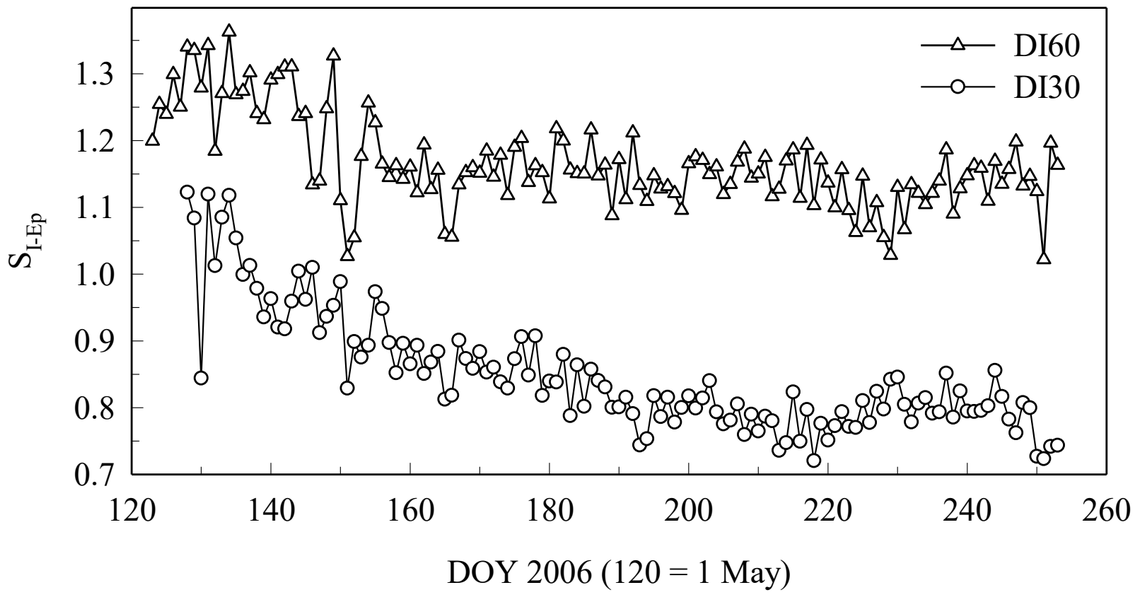


Figures

Avoid symbols on the lines of the figures

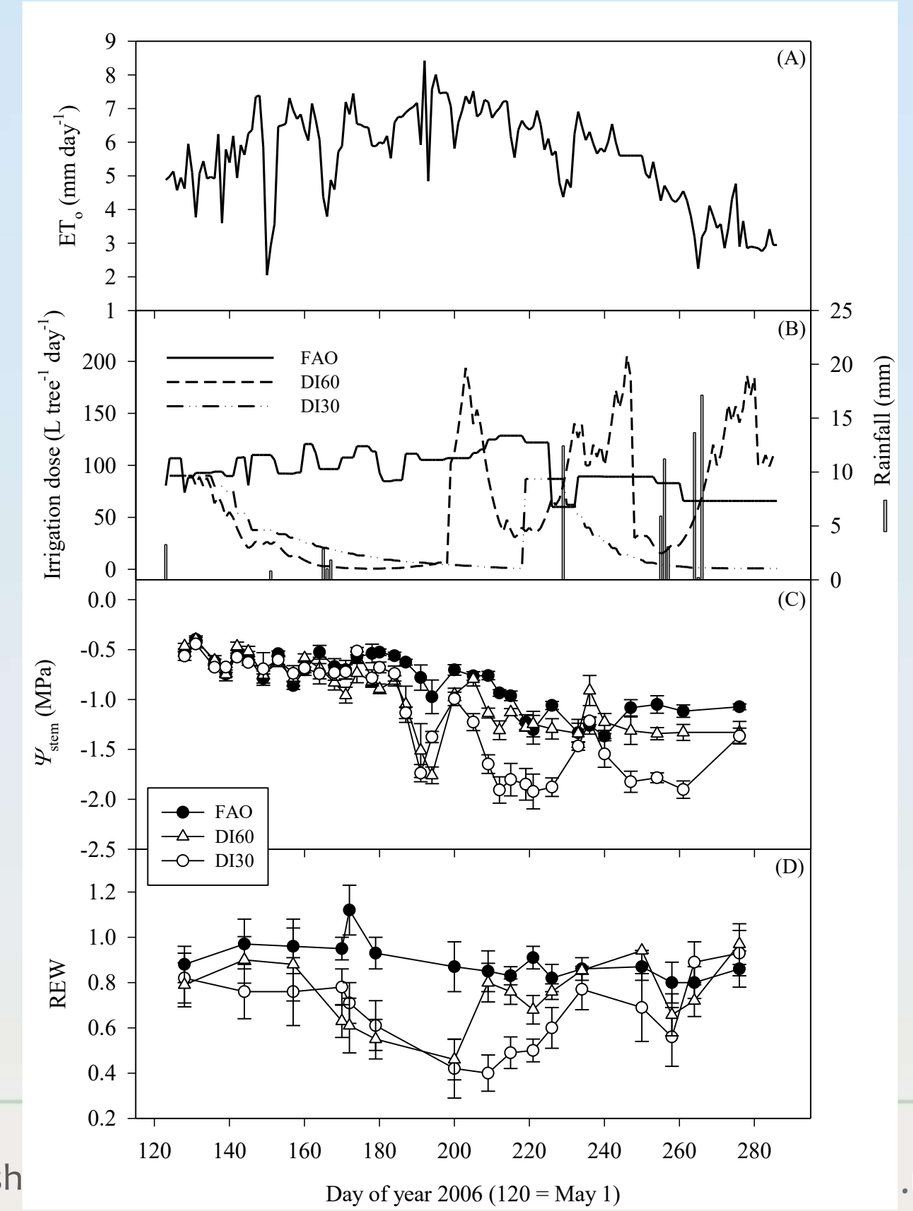
The scribe marks, or major and minor ticks, can be placed inside or outside the box

The size of symbols and width of the lines must be enough withouth been excessive



Figures

For the axis label, you can use either the complete name of the shown variable or its symbol or acronym, but be consistent.



Figures

Do not repeat labels and key to the symbols

Use widely accepted symbols

Be careful with dates and times: do not use the local time, but GMT or similar

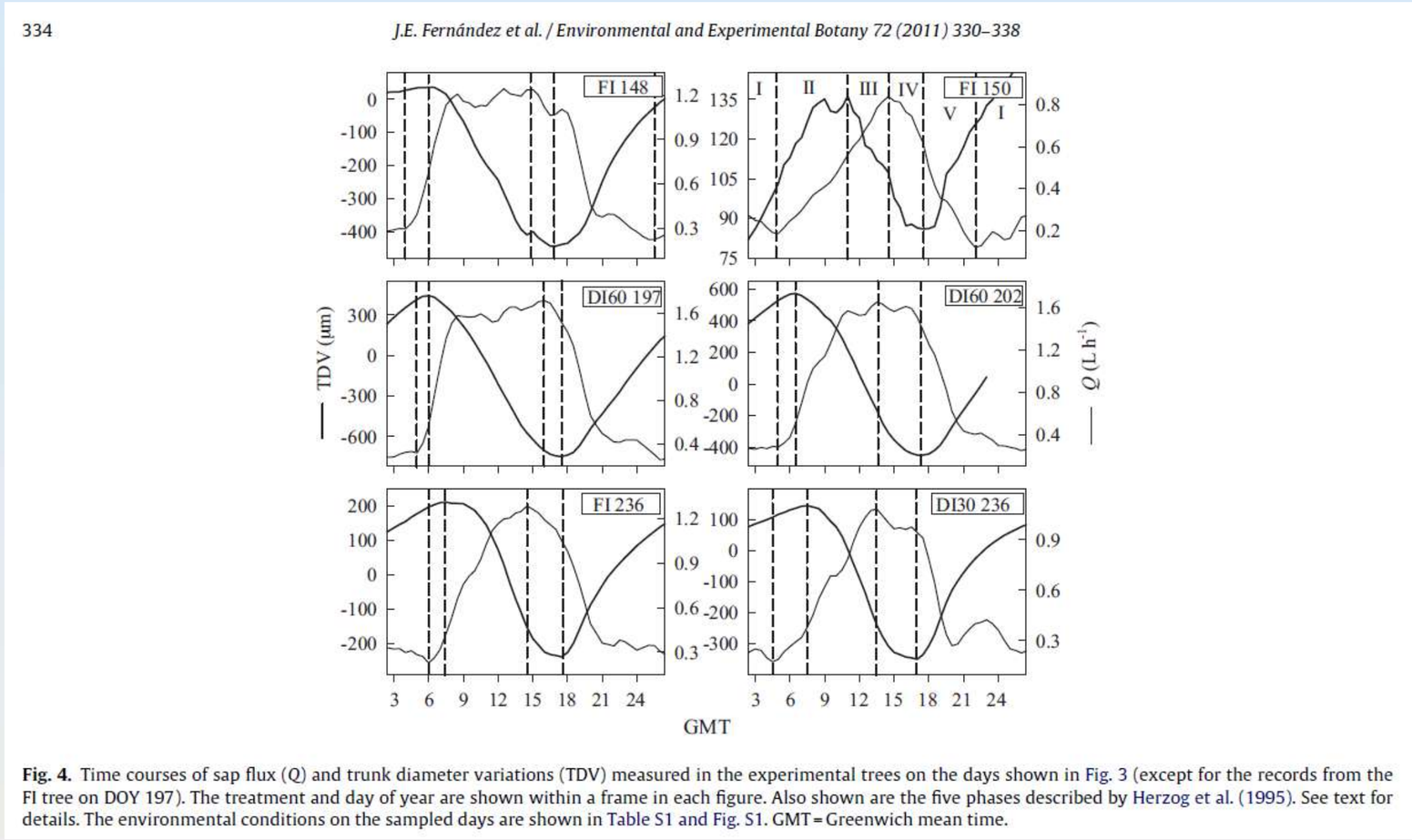
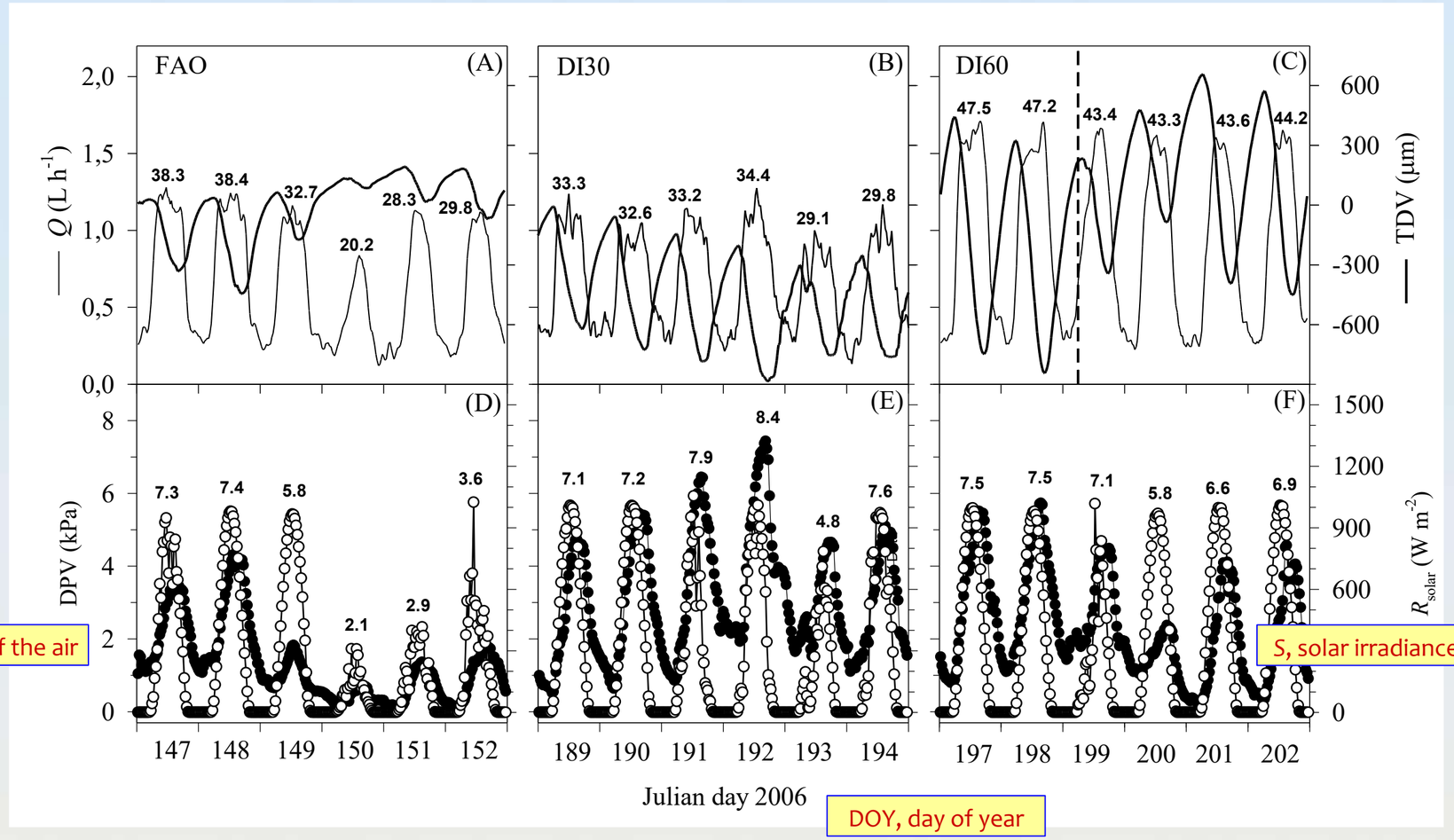


Fig. 4. Time courses of sap flux (Q) and trunk diameter variations (TDV) measured in the experimental trees on the days shown in Fig. 3 (except for the records from the FI tree on DOY 197). The treatment and day of year are shown within a frame in each figure. Also shown are the five phases described by Herzog et al. (1995). See text for details. The environmental conditions on the sampled days are shown in Table S1 and Fig. S1. GMT = Greenwich mean time.

Figures

Use DOY, not Julian day



D_a, vapour pressure deficit of the air

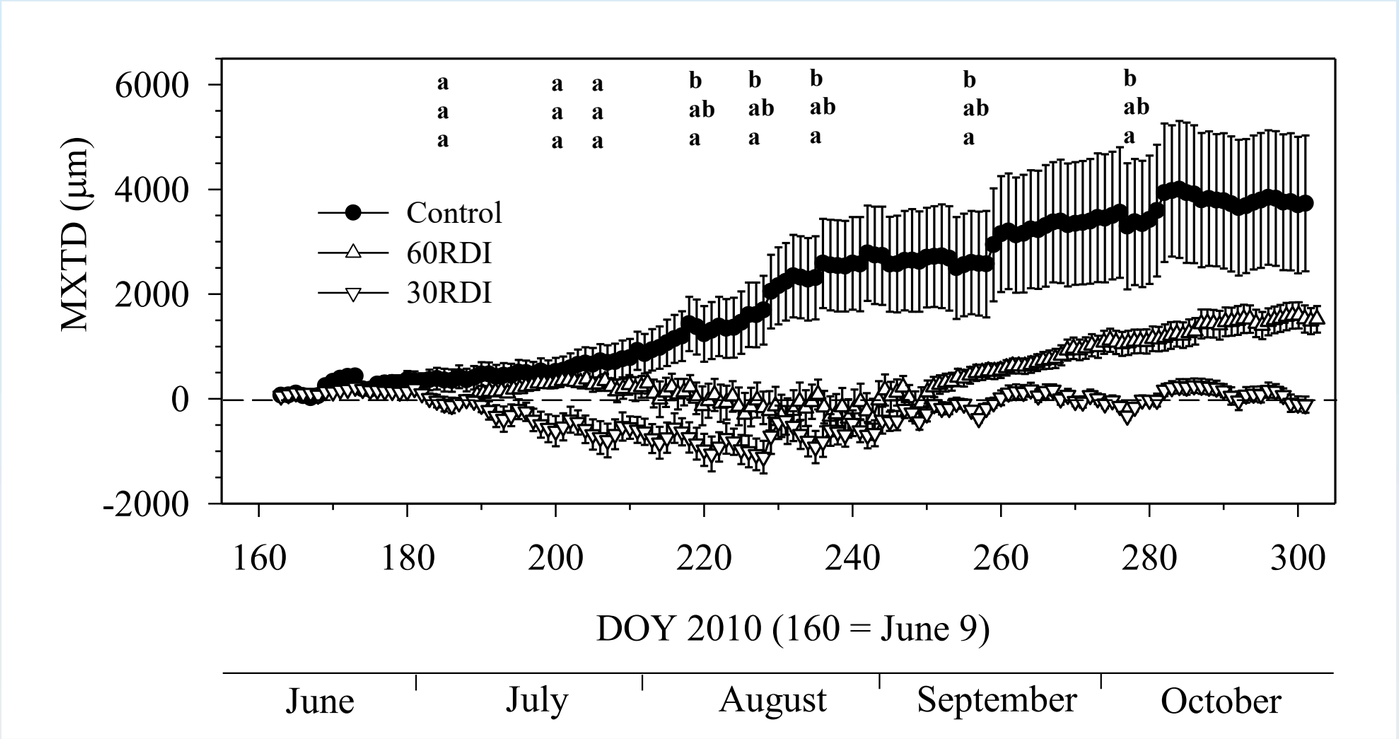
S, solar irradiance

DOY, day of year

The Julian calendar (46 a.C.) was replaced by the Gregorian calendar from 1582 (in 1923, in Greece)

Figures

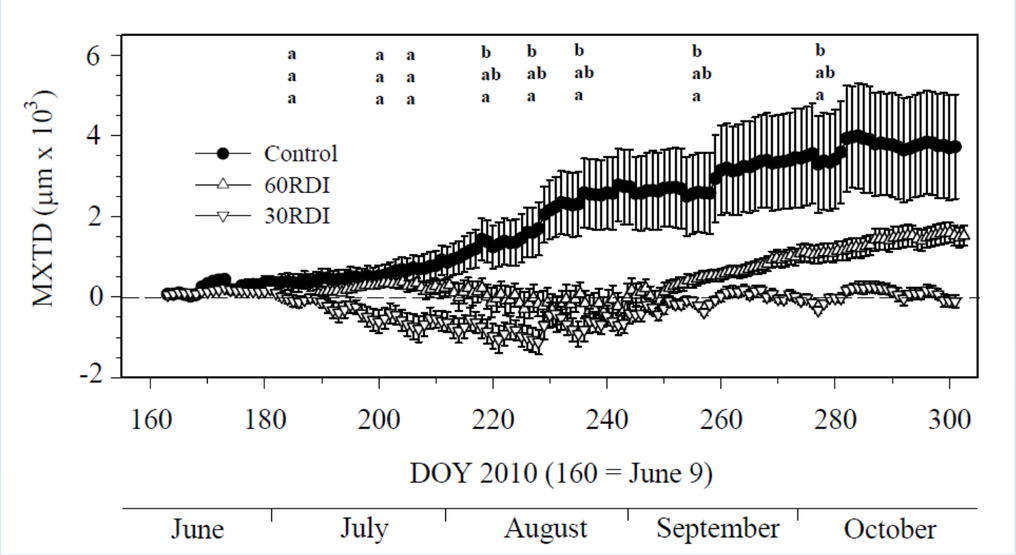
Be careful when using exponents.

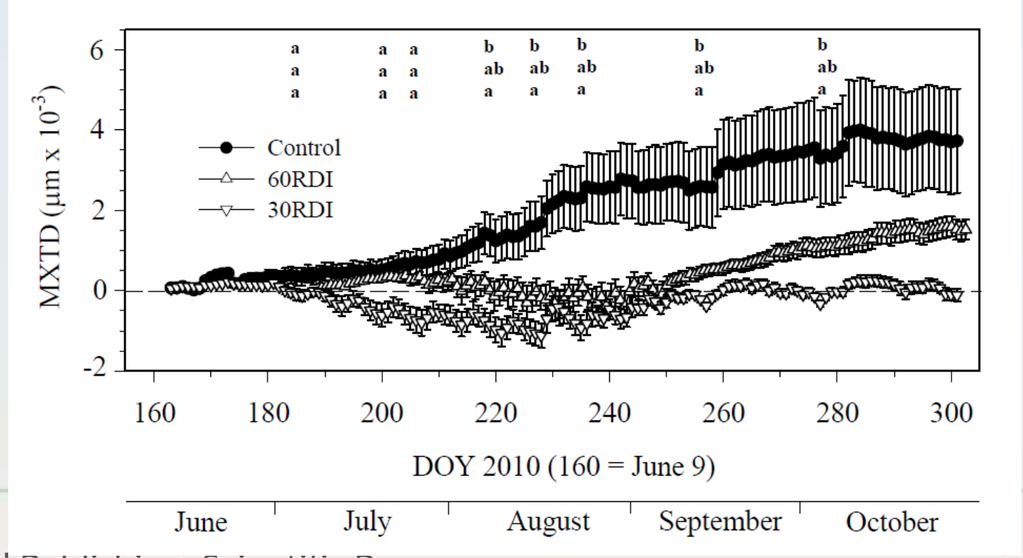


Figures

The *Journal of Bacteriology* considers that "cpm x 10^3" mean thousands of counts per minute.

However, the *Journal of Biology Chemistry*, uses "cpm x 10^{-3}" to express the same.

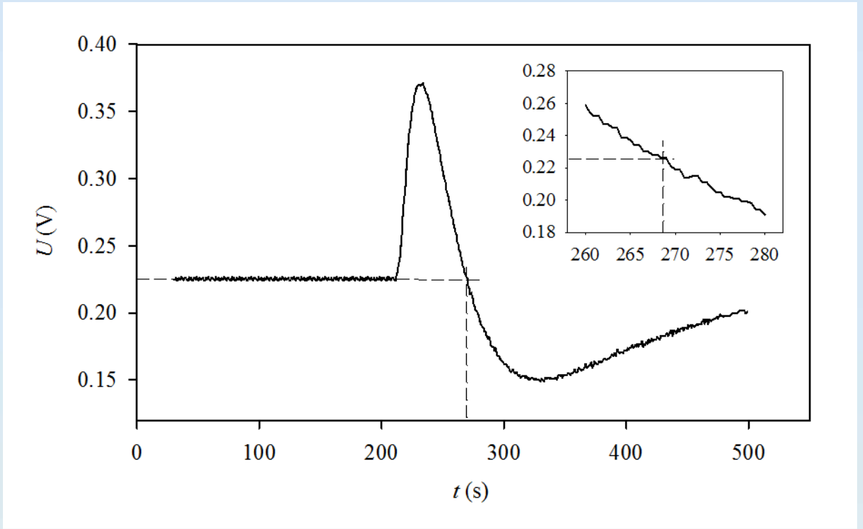


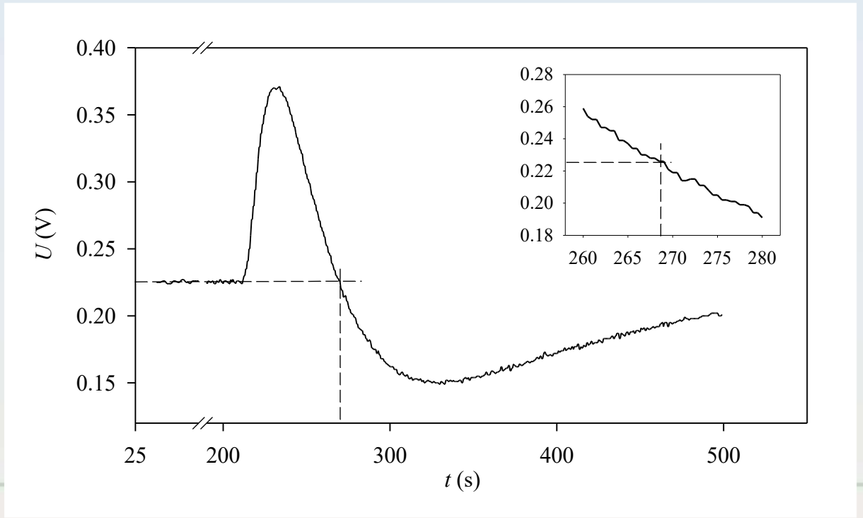


Figures

Do not make figures with large empty portions or full with useless data.

To avoid it, just ‘break’ the axis, or choose properly the range of data to show, and center the image within the box.



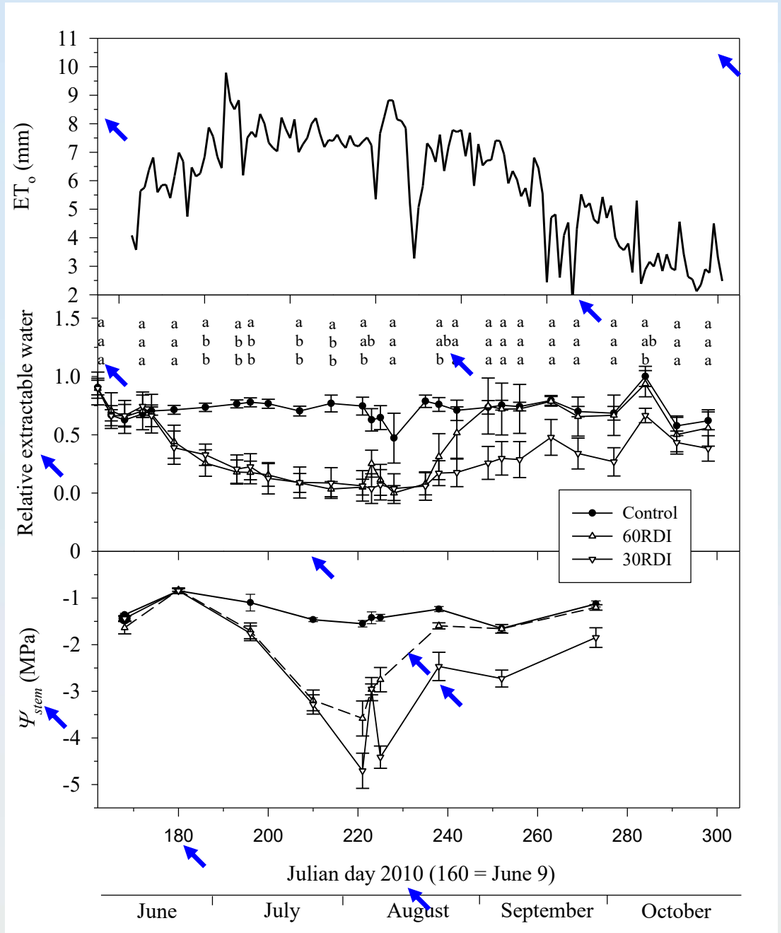


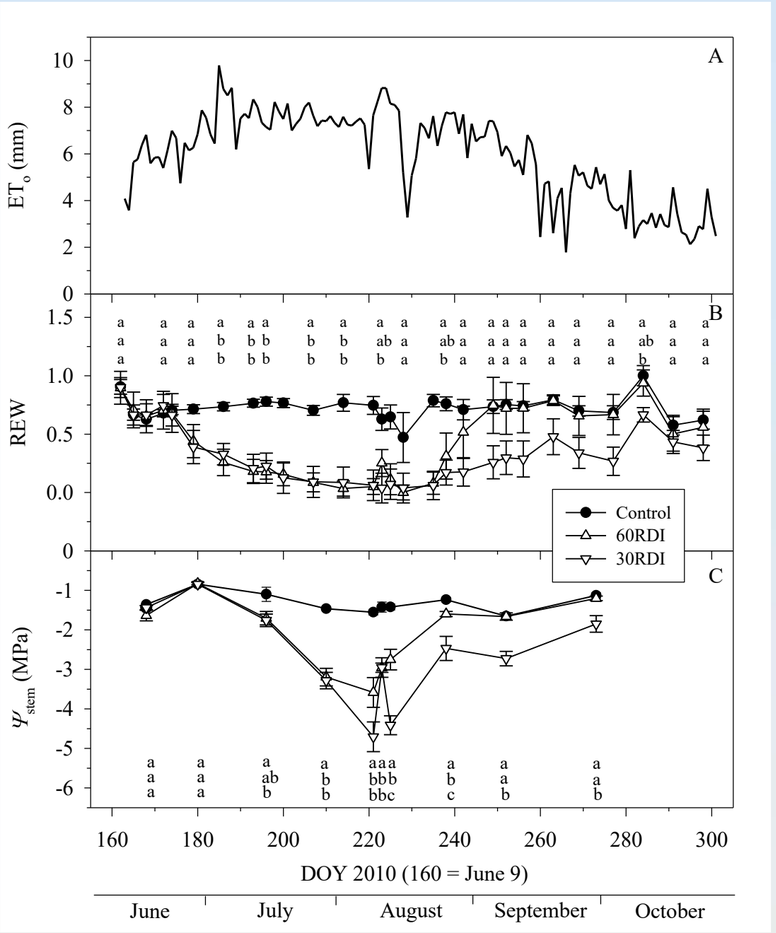
Figures

Choose carefully the colours, and size of numbers, letters and symbols: the figure must be clear and easy to read, even if published at a reduced size.

Do no forget to include information on the statistical difference of means.

Use different symbols for different treatments, but keep the same type of *connecting lines*.





Figures

Combine figures: representing the behaviour of different variables together usually helps to understand the studied phenomenom.

If a figure has several graphs, use letters to identify them.

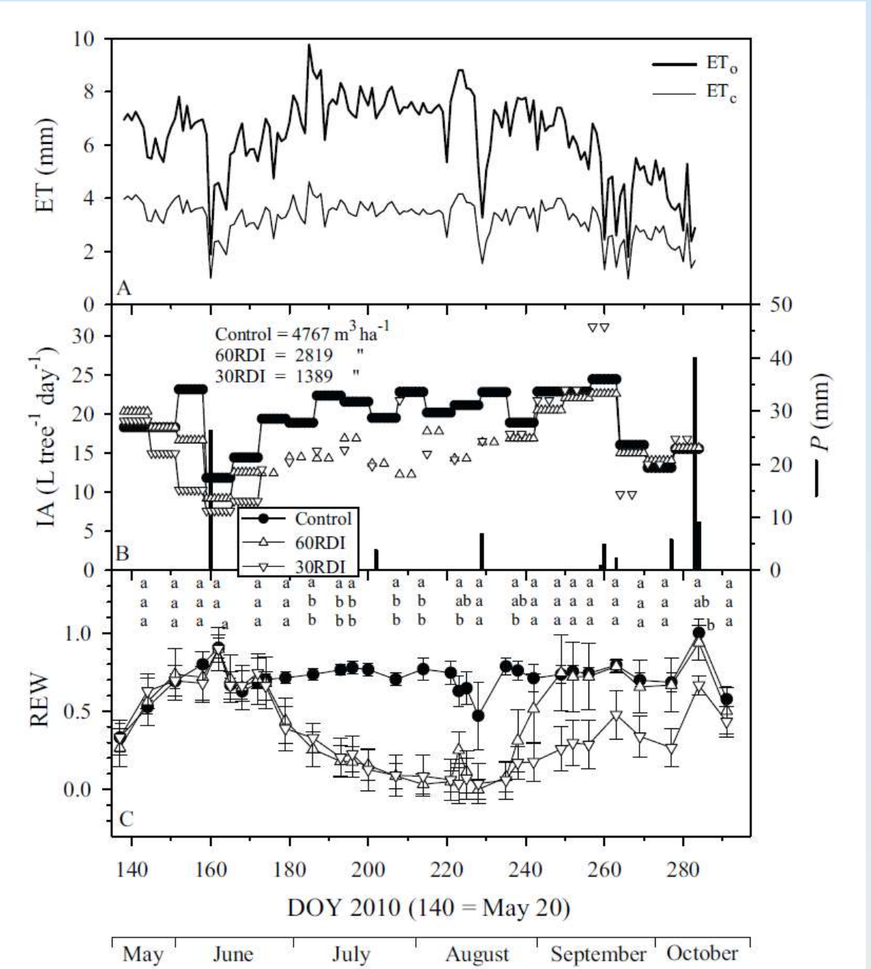


Fig. 1. Seasonal changes of (A) the potential (ET_o) and crop (ET_c) evapotranspiration, (B) the collected precipitation (P) and the irrigation amounts (IA) supplied during each irrigation treatment, and (C) the relative extractable water (REW) for each treatment. Vertical bars represent ± the standard error. Different letters indicate statistically significant difference ($P < 0.05$). DOY = day of year. See text for details on the treatments and on ET_o, ET_c and REW calculations.

Figures

Combine figures: representing the behaviour of different variables together usually helps to understand the studied phenomenom.

If a figure has several graphs, use letters to identify them.

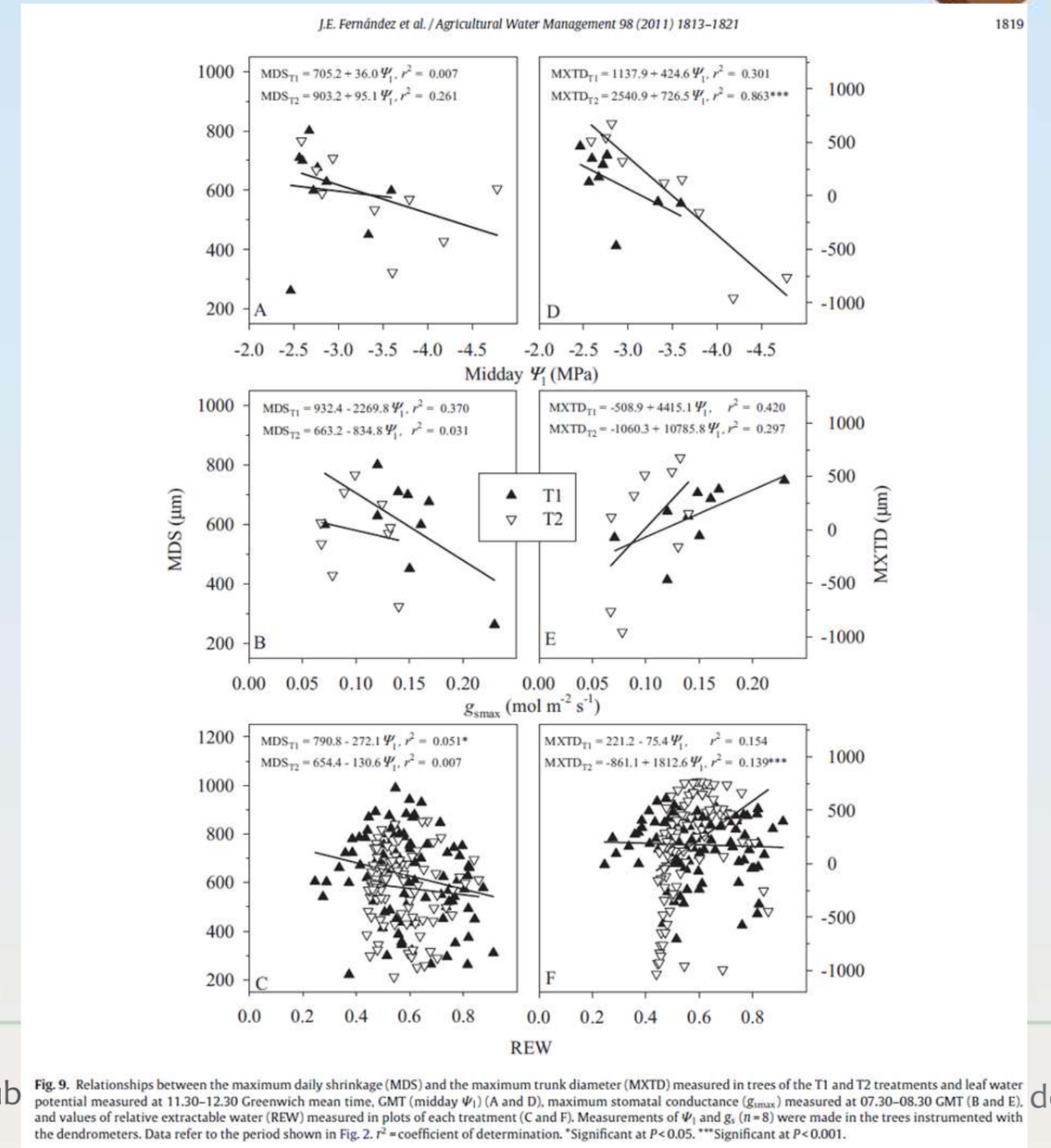


Fig. 9. Relationships between the maximum daily shrinkage (MDS) and the maximum trunk diameter (MXTD) measured in trees of the T1 and T2 treatments and leaf water potential measured at 11.30–12.30 Greenwich mean time, GMT (midday Ψ_1) (A and D), maximum stomatal conductance (g_{smax}) measured at 07.30–08.30 GMT (B and E), and values of relative extractable water (REW) measured in plots of each treatment (C and F). Measurements of Ψ_1 and g_s ($n = 8$) were made in the trees instrumented with the dendrometers. Data refer to the period shown in Fig. 2. r^2 = coefficient of determination. *Significant at $P < 0.05$. ***Significant at $P < 0.001$.

Figures

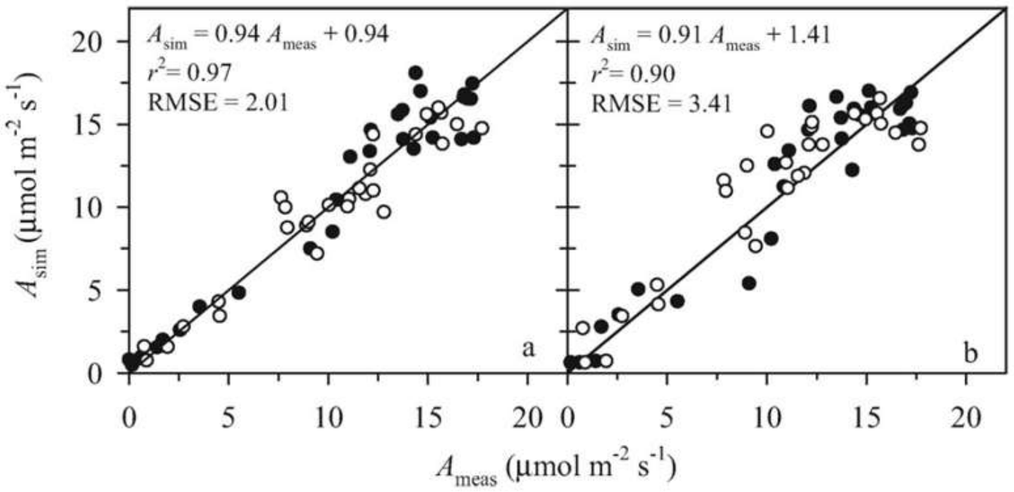


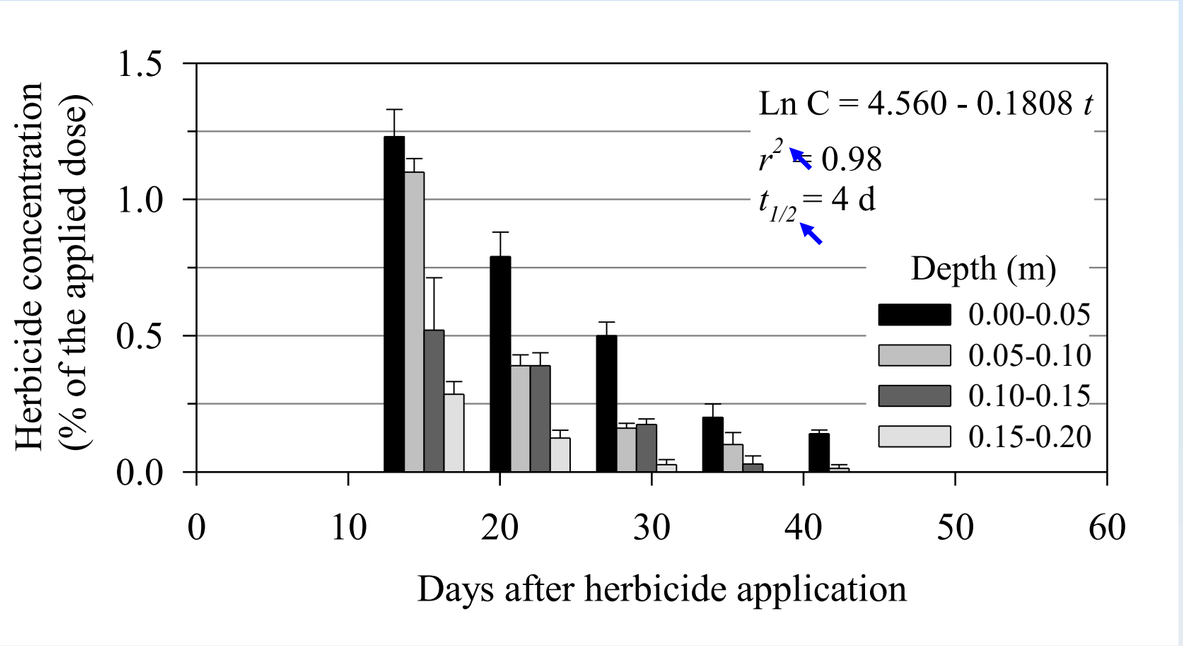
Figure 5. Modelled leaf photosynthesis rate (A_{sim}), following Farquhar's approach, versus measured values (A_{meas}) in ''Manzanilla'' olive trees, (a) when considering the seasonal adjustment of photosynthetic capacity shown in Figure 3, and (b) when considering a constant photosynthetic capacity. Each data point is the average of 10 leaves measured at different times of the day, from April to August, in irrigated (close symbols) and non-irrigated trees (open symbols).

Figures

The use of horizontal or vertical lines (*gridlines*) is rarely necessary. Major and minor ticks are usually enough.

When using gridlines, degrade them (gray, with 15 % of black).

Symbols must be explained in the figure, rather than in the caption.



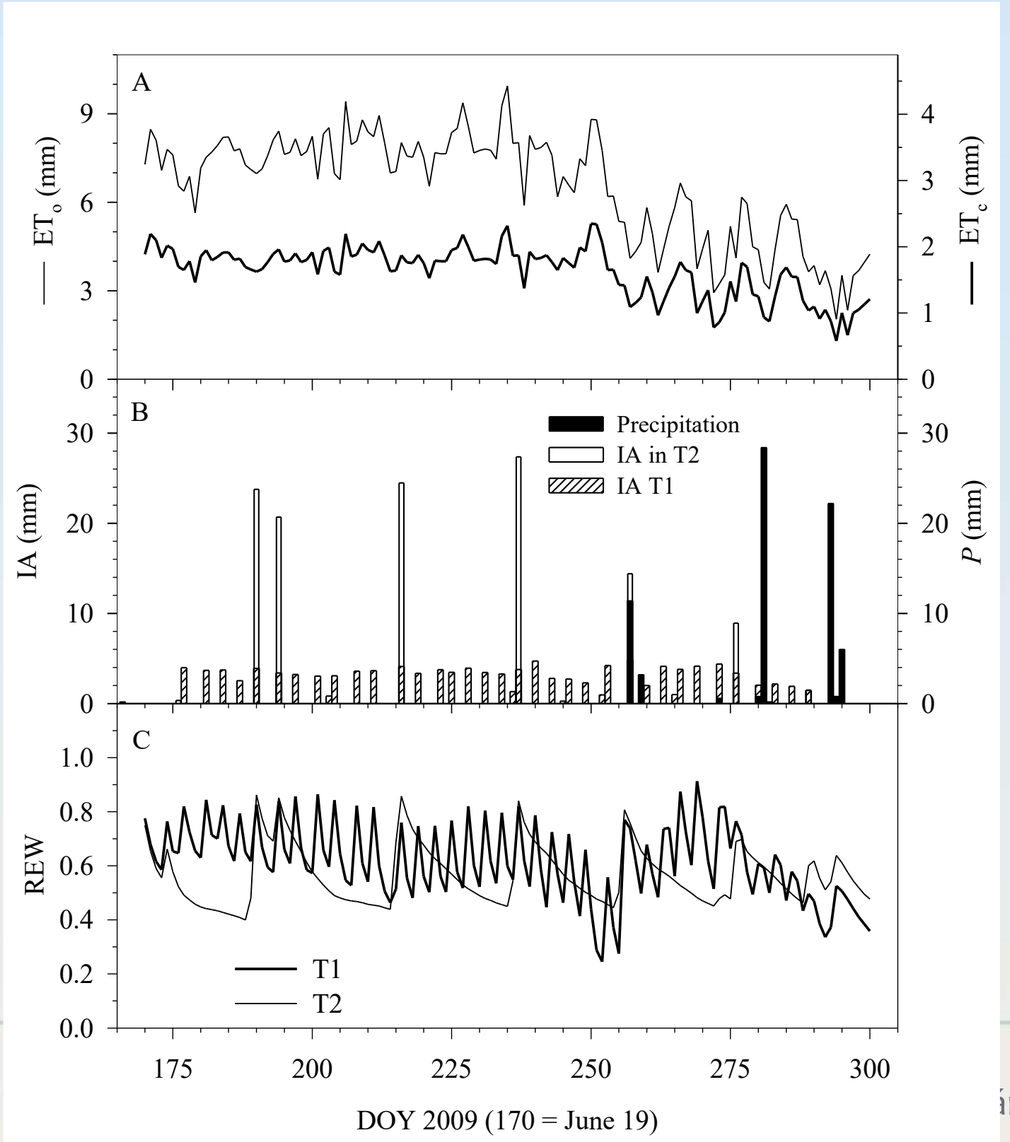
When using gray bars or symbols, adjust the percentage of black to avoid confusion: 25, 50, 75 % of black. Nowadays, electronic copies allow for the use of colours without additional costs.

Figures

When information dispayed in two or more figures must be compared, use the same range of values in the axes of all of them.

Use the same lettering in all the figures of an article.
A *sans serif* type, such as *Helvetica*, is preferred because it is easy to read.

You can use **boldface** to highlight something, e.g. the figure number or the axis labels.



Figures

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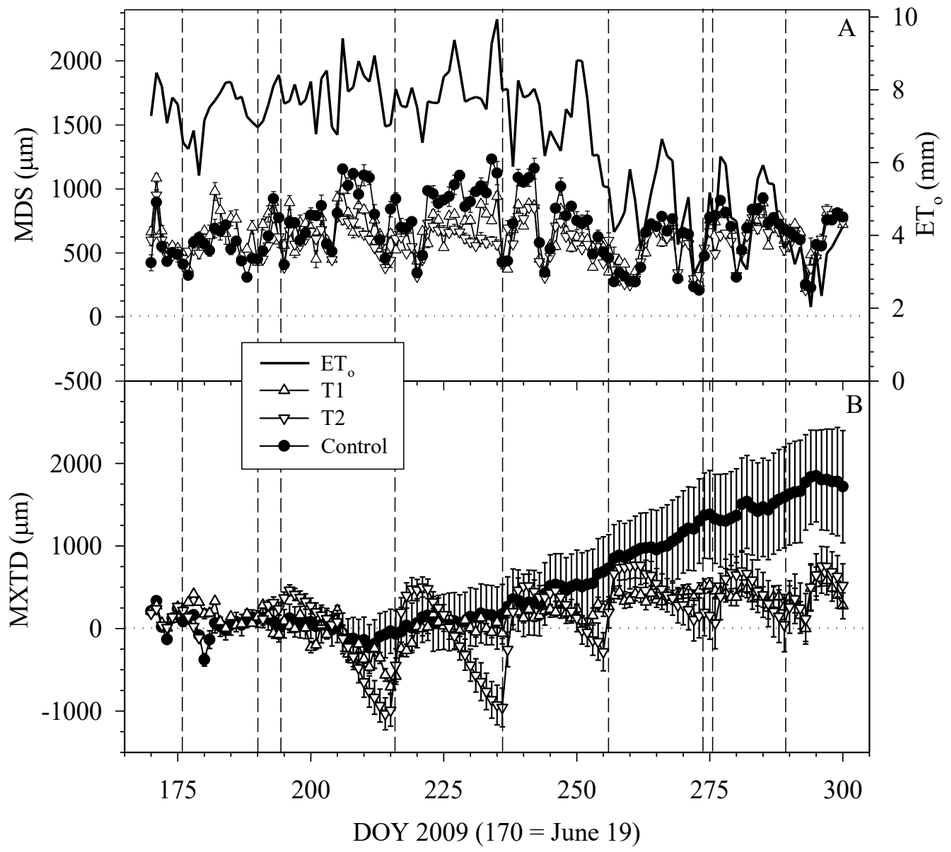
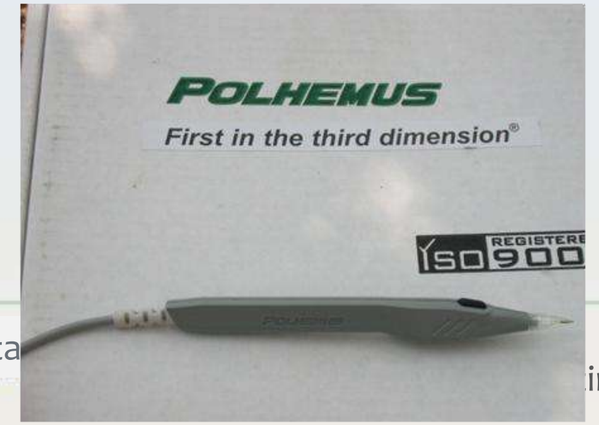


Photographs

Avoid details that may create a poor impression on the reader.

Photographs



Photographs

Avoid details that may create a poor impression on the reader.

Photographs

When need it, include a reference to the size

Use marks (arrows, circles, lines…) for clarity

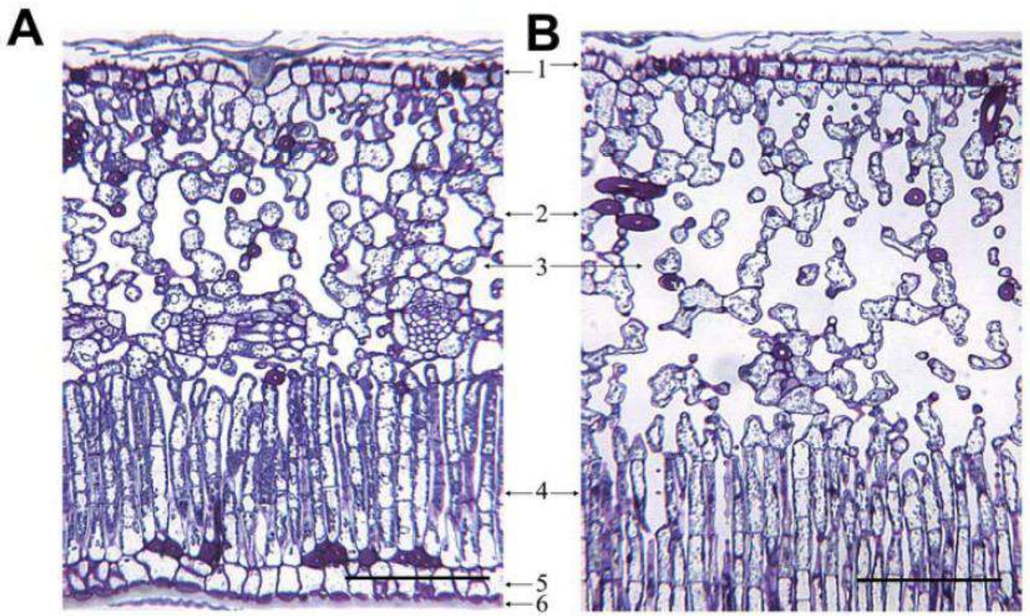


Fig. 6. Typical images of cross-sections performed on olive leaves under well-watered conditions (A; state I) and severe water stress (B; state III); bar = 100 µm. (1) Lower epidermis, (2) spongy mesophyll, (3) air space, (4) palisade mesophyll, (5) upper epidermis, (6) cuticle.
401x247mm (150 x 150 DPI)

Photographs

The photograph must show only what you want to show to the reader: before taking it, remove everything else.

Photographs

The photograph must show only what you want to show to the reader: before taking it, remove everything else.

Photographs

Diagrams

Diagrams can be used to better understand what you want to show

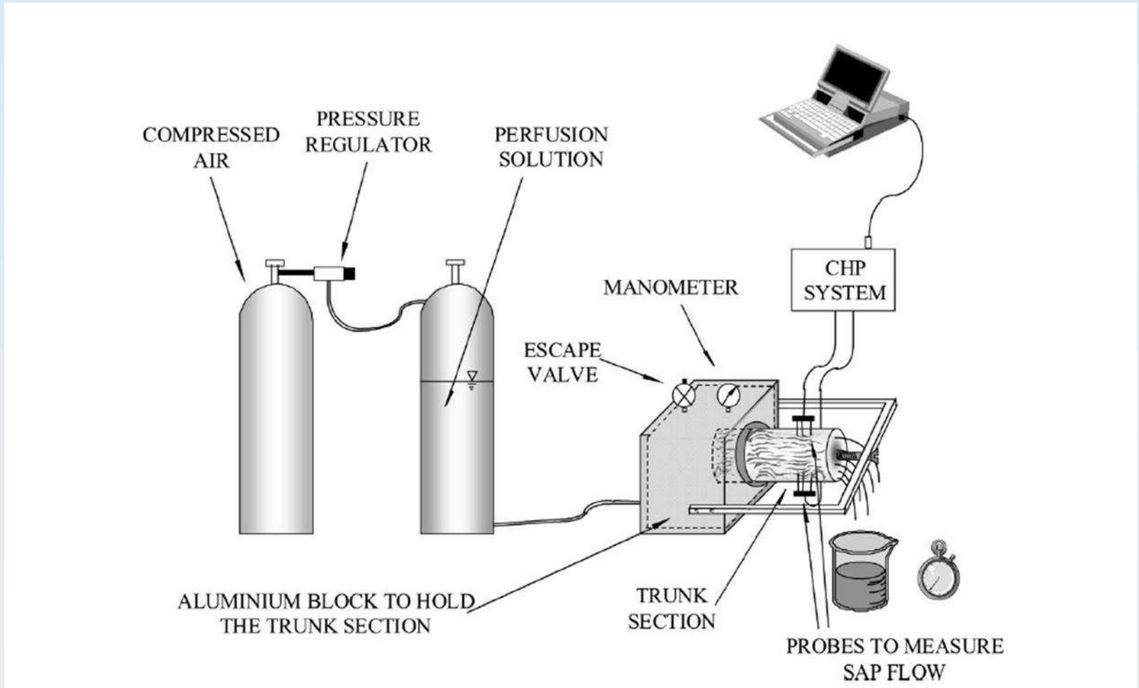
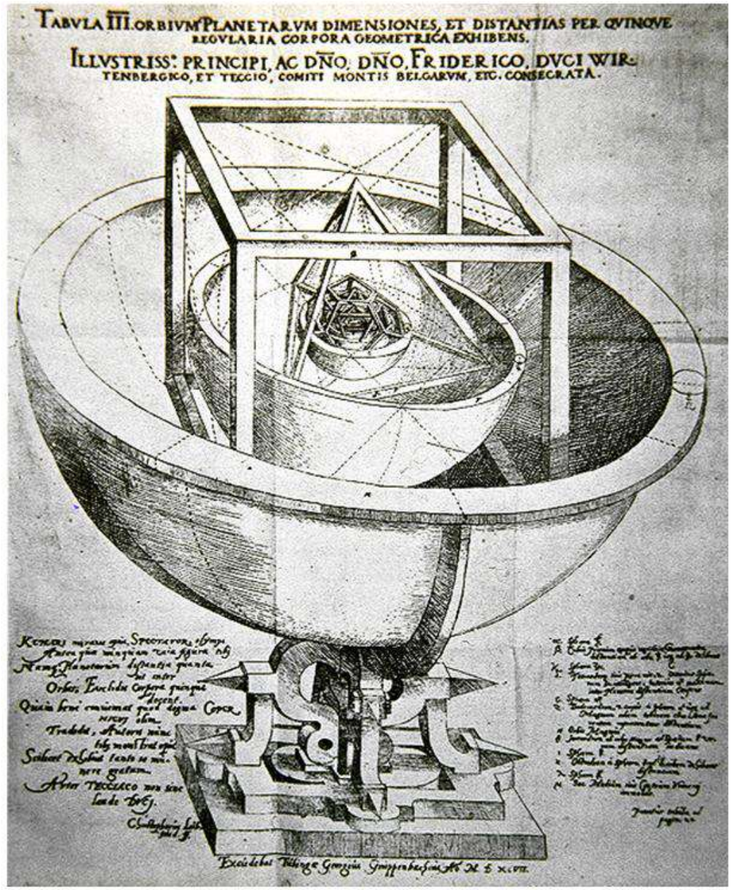


Fig. 1. Components of the high-pressure device used to force a known flux of solution through a trunk section of olive. Also shown are heat-pulse probes for measuring the sap flow. The flow rate can be adjusted by varying the pressure of air with the pressure regulator attached to the bottle of compressed air.

¡Thank you!


TABVLA III. ORBIVM PLANETARVM DIMENSIONES, ET DISTANTIAS PER QVINQVE
REGVLARIA CORPORA GEOMETRICA EXHIBENS.
ILLVSTRISS: PRINCIPI, AC DNO. DNO. FRIDERICO. DVCI WIR-
TENBERGICO, ET TECCIO, COMITI MONTIS BELGARVM, ETC. CONSECRATA.