

GUIDELINES FOR PREPARING MANUSCRIPT

Abstract

An Abstract or summary of your paper should not exceed 300 words (NOT including title, authors, and affiliation of each author). The Abstract should not contain any figures or tables. Please use MS Word 98 and above. Use **Times New Roman font 12 pt** with **single spacing** with 2.5 cm (1 inch) margins all around. The title should be in **bold**. The author(s) names with initials should be in the next line. Name of corresponding author should be followed by *. Superscripts may be used to designate affiliation of authors if different from each other. **An example is provided below:**

Collection, characterization and identification of drought, salinity and heat tolerant *Sinorhizobium* nodulating alfalfa for adaptation to climate change

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Abstract

The gram-negative bacteria *Sinorhizobium meliloti* and *S. medicae* are able to interact with roots of alfalfa to form nitrogen-fixing nodules and survive as a free living saprophytic bacterium in the soil. The host, alfalfa is the most important forage legume crop in the arid and semi-arid areas of Morocco and North Africa. In these areas, alfalfa is grown in marginal soils and frequently subjected to drought, extremes of temperature and high or low soil pH, soil salinity and heavy metals, which affect biological nitrogen fixing ability of rhizobia and productivity of the host. In this study, we examined physiological diversity of the sampled isolates from marginal soils of arid and semi-arid regions of Morocco for tolerance to the above stresses, molecular genotypic diversity at Repetitive Extragenic Palindromic DNA regions of *Sinorhizobium* nodulating alfalfa, and biological nitrogen fixing efficiency of some of the tolerant isolates. The study revealed that out of the 157 sampled isolates, 136 isolates were identified as *S. meliloti* and the rest as *S. medicae*. Further phenotyping of these alfalfa rhizobia for tolerance to the environmental stresses revealed a large degree of variation: 55.41%, 82.16%, 57.96% and 3.18% of the total isolates were tolerant to NaCl (>513mM), water stress (-1.5 MPa), high temperature (40°C) and low pH (3.5), respectively. Sixty-seven isolates of *S. meliloti* and thirteen isolates of *S. medicae* 80 that were tolerant to salinity were also tolerant to water stress. Genotyping with rep-PCR revealed higher genetic diversity within these phenotypic clusters and classified all the 157 isolates into 148 genotypes. Some of the tolerant strains were also efficient in biological nitrogen fixation. Therefore, these tolerant strains have a great potential for exploitation in salt and drought affected areas for BNF in alfalfa and also for adaptation to climate change.

Paper Manuscript

Please use MS Word 98 and above, and **Times New Roman font 12 pt** with **double spacing** and 2.5 cm or 1 inch margins all sides. The title should be in **bold**. The author(s) names with initials should be in the next line. Superscripts may be used to designate affiliation of authors if different from each other as in the Abstract. The Corresponding Author should be marked with an asterisk(*). **The length of the paper should not be more than 4000 words excluding title, affiliations, references and tables. The editors reserve the right to edit papers that are longer than required.**

Title

The title should give the reader what the paper is about. Therefore, it should be brief and informative. Use common names for crops and avoid abbreviations. The usual limit for a title is 12 nouns (that is, not counting “the”, “of”, “and”, etc).

Footnotes

Footnotes are generally not encouraged, but may be used if absolutely necessary. Number any footnotes consecutively.

References

References in the text of the paper should follow the author-date system (e.g., Sadeghi, 2015; Collard and Mackill 2009; Singh et al. 2017) with no comma between author name and date. Use the following examples in references which should be listed alphabetically at the end of your paper.

• Journal article

Sadeghi, B. 2015 *Zizyphus mauritiana* extract-mediated green and rapid synthesis of gold nanoparticles and its antibacterial activity. *Journal of Nanostructure in Chemistry* 5: 265–273.

Collard, B.C.Y. and D.J. Mackill. 2009. Start codon targeted (SCoT) polymorphism: a simple, novel DNA marker technique for generating gene-targeted markers in plants. *Plant Molecular Biology Reporter* 27(1):86-93

Singh, S.K., S. Chhajer, R. Pathak, R.K. Bhatt and R.K. Kalia. 2017. Genetic diversity of Indian Jujube cultivars using SCoT, ISSR and rDNA markers. *Tree Genetics and Genomes* 13:12-18.

• Books

Maude RB. 1996. Seed-borne diseases and their control: Principles and practice. Wallingford: CAB International. p 280.

Rawson, H. 1981. A Dictionary of Euphemisms and Other Doubletalk. Crown Publishers, New York, NY, USA.

• Chapter in a Book

Bari, A., A. Della and J. Konopka. 1998. Locating diversity using germplasm passport data and herbarium records: case of *Aegilops* in Cyprus. Pages 53-56. in *Use of Triticeae in Wheat Improvement* (A.A. Jaradat, ed.). Science Publishers, Enfield, NH, USA.

N.B.: - Do not capitalize the chapter title, but capitalize the book title.

• Chapter in Symposium Proceedings

Amri, A., J. Valkoun, M. Ajlouni, R. Assi, Y. Sbeith and A. Saad. 2003. Promotion of in situ conservation of dryland agrobiodiversity in West Asia. Pages 38-39 in *Sustainable development and management of dry lands in the 21st century: Proceedings of the Seventh International Conference on Development of Dry Lands*. 14-17 September 2003, Tehran, Iran.

Hawtin, G.C. 1982. The genetic improvement of faba bean. Pages 15-32 in *Faba Bean Improvement: Proceedings of the Faba Bean Conference* (G. Hawtin and C. Webb, eds.), ICARDA/IFAD Nile Valley Project, 7-11 March 1981, Cairo, Egypt. Martinus Nijhoff Publishers, The Hague, The Netherlands.

N.B.:- In the second example there is no need to repeat the sponsor's address in publisher's place as the sponsor's address and the location of the conference are the same, and the sponsor is the publisher of the proceedings volume.

- **Entire Proceedings**

Hawtin, G. and C. Webb (eds.). 1982. Faba Bean Improvement: Proceedings of the Faba Bean Conference (G. Hawtin and C. Webb, eds.), ICARDA/IFAD Nile Valley project, 7-11 March 1981, Cairo, Egypt. Martinus Nijhoff Publishers, The Hague, The Netherlands.

ICRISAT (International Crops Research Institute for Semi-Arid tropics). 1975. Proceedings of the International Workshop on Grain Legumes. ICRISAT, 18-20 January, Hyderabad, India. ICRISAT, Patancheru, TS, India.

N.B.:- The sponsoring institute takes the author's place if there are no editors.

- **Un-published reports and papers**

Avoid quoting the above

- **Personal Communication**

Citations referring to communications which cannot be retrieved by readers should not be included in the reference list. Such communications (personal letters or verbal discussions, etc.) should be mentioned in the text as follows: ...as was recently discovered (A.B. Damania, ICARDA 1999 pers. comm.).

- **Articles "in press" or "under preparation"**

Journal articles, book chapters that are accepted for publication but not published as yet can be included in the references list, but they will be without volume and/or page numbers. In this case the words (in press or under preparation) should be at the end of the reference.

Tables

Each table title should be self-explanatory. All Tables should be numbered consecutively and referred to in the text at appropriate places as Table 12 (for example). Do NOT embed your table in the body of the paper. Include it at the end of your paper or in separate files. There should be only one table per page.

Figures

Each figure title should be self-explanatory. All figures should be numbered consecutively and referred to in the text at appropriate places as Fig. 11 (for example). Do NOT embed your figure in the body of the paper. Include it at the end of your paper or in separate files. There should be only one figure per page.

Photographs

Photographs can be submitted as *.jpeg or *.tiff files only. Color photographs do not reproduce well in black and white. However, if the subject is bright they can be included.

Grammar and spellings

Please use grammar and spellings as mentioned in the *Webster's New Collegiate Dictionary*.

Numbers

Use a numerical or numerals

i) For expressing any number that immediately precedes a standard unit of measure (abbreviated):

ii) 44 g 88 mm 250 m²

Date, etc.

For a date, an expression of time, a page number, a percentage, a decimal quantity, or a numerical designation:

13 April 2017 the time is 07:45 page 123

37.8 g a magnification of 40 88%

For a number implying arithmetical manipulation

14 multiplied by 3 a factor of 4

In most situations not mentioned above, use words for numbers one through nine and numerals for larger numbers:

Four plants three flowers 12 leaves 32 pods

In a series containing some numbers of 10 or more and some less than 10, use numerals for all:

Germplasm scientists collected 5 genotypes of chickpea, 25 of durum wheat, 19 of faba bean, and 7 of lentil from a village near Aleppo.

Do not begin a sentence with a numeral:

Twenty-five seeds were sown in each pot.

If two related numbers occur at the beginning of a sentence, only the first need be spelled out:

Fifteen or 20 seeds were sown in each pot.

In writing large number ending in several zeros, either substitute a word for part of the number or add an appropriate prefix to a basic unit of measurement:

1.2 million (NOT 1,200,000) 46 µg (NOT 0.000046 g)

Use numerals for all numbers referring to figures and tables:

Fig. 22. Table 11.

In general, use the decimal system rather than fractions:

About one-third of the plants in the field survived the disease.

All surviving plants (1/3 of those sprayed) were selected for crosses.

Dates and time

Write the day, month and year in this form:

28 July 1960 (NOT July 28, 1960)

Periods or seasons extending over parts of two successive calendar years should be indicated by the

use of a solidus (forward slash):

The 2016/17 seasonwinter of 2016/17 fiscal year 2015/16

Use a hyphen to indicate continuing numbers – dates, time, or reference numbers:

2012-15 10:00-11:00 a.m.

April-May 2017 pp. 130-155.

From 2005 to 2016 (NOT from 1985-92)

From 8:00 a.m. to 6:00 p.m.

From January to July

Between 2001 and 2004 (NOT between 2001-04)

Spell out particular centuries:

Twenty-first century (NOT 21st century)

Use full number for decades:

1990s (NOT 90s or nineties)