Kasetsart Journal Natural Science

Style Guide for Authors

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Prepared by Andrew Warner (English Editor, Kasetsart Journal Natural Science) and reviewed by the Journal’s editorial staff and board.

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Foreword

Kasetsart Journal (Natural Science) is an official publication of Kasetsart University, with six issues annually. All papers are refereed and must satisfy the requirements set down by the Editorial Board of the Journal.

This style guide for authors provides the approved writing format for the publication of documents in the Journal. The guidelines will be reviewed and updated annually.

While many of the style points are consistent with other reputable reference sources (for example, the Chicago Manual of Style referred to later), like many of these same reputable sources, we have a few of our own idiosyncrasies. In general, we believe writers will find the style notes below adopt a practical approach to encouraging clear, unambiguous scientific writing.

The consistent application of this style will ensure a professional standard is applied to the use of English in all material published in the Natural Sciences by the University.

Dr. Wichien Yongmanitchai  
Editor-in-Chief  
Kasetsart Journal Natural Science

Before You Turn the Page

Examples of correct usage for English words are shown in blue text with italics or bold as required.

nonabrasive, self-regulatory, rainforest

Examples of incorrect English usage in this document are rare (to avoid encouraging their use); where used, they are in red (in bold) and prefaced by the word NOT (capitalized in bold).

Where alternatives are acceptable to the Journal style, they are indicated by the word OR (capitalized in bold) between the options. Similarly, the word BUT (capitalized in bold) is used to show differences.

English word parts (for example, prefixes and suffixes) are shown in bold preceded or followed by a hyphen indicating they are only a part of a word -ly, -ise, ize, ex-, self-.
Major style points for the Kasetsart Journal Natural Science

Here are some major points. More detail and examples can be found in the following pages.

1. Use **American (USA)** spelling.

2. Use **Times New Roman 12** font size with **single spacing** between words and sentences.

3. Use **double line spacing**.

4. Include each table or figure on a separate page at the end of the document (or if high quality images are used, place them in separate documents). Indicate the approximate location in the body of the document by a paragraph in the text (for example, “**Insert Table 1 about here**”).

5. The **Chicago Manual of Style** is the reference source used to determine most style points. As well as being available in hard copy (the 16th edition is the latest), there is an excellent subscriber service provided on line at [http://www.chicagomanualofstyle.org/home.html](http://www.chicagomanualofstyle.org/home.html)

Preparation

Your document, especially if it is an academic paper, will be all the better if you spend some time first organizing your thoughts so you are clear in your own mind about what you want to say. Editing should be included as a part of your timetable for publication.

Inaccurate work with misspelling, incorrect English grammar, ambiguous wording and a lack of systematic writing will reflect poorly on your own academic standing and may well be returned for rewriting which will delay publication of your research.

You are encouraged to make use of a spelling checker to ensure that there are no spelling errors. Poor spelling reflects badly on the authors.

In particular, you should set aside time for a final critical proof reading of your document including all references, tables and figures. This is a time-consuming task and requires 100% concentration.
Punctuation

The correct use of punctuation makes the text easier to read and understand. Good punctuation should be unobtrusive and certainly should not confuse the reader. Parentheses and brackets are dealt with in a separate section below.

As a general rule, less rather than more punctuation is recommended; however, punctuation should be used wherever it can help avoid misinterpretation or reduce any ambiguity to the reader.

Here are some general points that address common punctuation inconsistencies with the Journal style found in manuscripts submitted during the past few years.

Space ( )

Do NOT use a space before a period (.), comma (,), colon (:), semicolon (;), exclamation mark (!) or question mark (?). There should always be a single space after these forms of punctuation.

Leave only one space after a period at the end of a sentence. Do NOT use spaces to position the start of text or to align columns. Use the tabs or table formatting options, as these are easier to adjust when typesetting the final document.

Period or Full stop (.)

Only complete a sentence with a single period even if the final element requires a period in its own right.

The chemicals were supplied by General Chemical Co.

Comma (,)

Do not use a serial comma (sometimes referred to as an ‘Oxford comma’) before the ‘and’ prior to the last element in a list.

order, family, genus and species
NOT order, family, genus, and species
(comma incorrectly included after genus)

Minimize the use of commas BUT use commas to separate components within complex sentences to prevent possible misreading.

Measurements were made with a girth tape, a compass and chain, and a clinometer. (the last comma is used to show that “compass and chain” is one unit in the list)
Colon (:)  

Use a colon when the second part of the sentence directly results from the first part. A colon is particularly useful to introduce a list where a comma is included in the details of at least one of a list of items, with a semicolon used to separate each item (see the second example below). See also the use of an em dash with “namely” below as a means of avoiding any ambiguity in specifying items in a list.

There were three aims: to identify the species, to map the distribution and to recommend reserve areas.

The steps in the process were: first, stir the mixture; second, measure the pH; and third, record the value.

Semicolon (;)  

A semicolon is used to join two parts of a sentence that belong together but contain different statements. In most cases a semicolon can be replaced by ‘and’, ‘but’ or ‘because’. Note that each sentence part joined by the semicolon must be a complete sentence itself, with a subject and verb.

En dash (–)  

An ‘en dash’ (longer than a hyphen, but shorter than an em dash) is most commonly used to connect numbers. With a range in numbers (such as dates, times and page numbers), it signifies up to and including (or through). Note that an en dash is NOT used with either ‘from’ or ‘between’.

Kasetsart J. (Nat. Sci.) 44: 79–82.  
Figures 1–3  
Tables 1a–1e  
BUT Data were collected from May to June.  
BUT The height ranged between 6 and 7 m.

Do NOT use an en dash to represent a range of numbers if this could be ambiguous. This applies especially where the en dash could be confused with a minus sign.

a range in values of -1.45 to 3.45  
NOTE a range in values of –1.45–3.45

Note that there is no space before or after the en dash.

Em dash (—)  

An em dash is longer than an en dash and is used to introduce words that explain or elaborate on what has gone before or to amplify a statement (the amplification is completed with an em dash as well without a trailing space, as shown in the second example below). An em dash is
commonly used in combination with ‘namely,’ or ‘that is,’ to replace parentheses when emphasis is required.

The difference was clear—namely, that the irrigated plants were larger.
Three important conditions—adequate rainfall, warm weather and fertile soil—are required for successful regeneration.

Note that there is no space before or after the em dash.

**Hyphen (-)**

You should turn off automatic hyphenation in your word processor as it may insert hyphens that are not acceptable to the Journal style described below.

The use of the hyphen as a minus sign is accepted by the Journal, as the normal ‘ASCII’ keyboard uses the same Unicode four-digit hexadecimal value for both, (even though they are really different symbols with different meanings).

Do **NOT** insert hyphens in long strings of text such as URLs.

The Journal style aims to minimize the use of hyphens in compound words.

nonabrasive, nonabsorbent, nonsignificant grassland, fuelwood, rainforest, subsample, macronutrients, microorganism, revegetation

However, some more common uses of a hyphen in compound words are with **self-**, **all-**, between a prefix and a capitalized word, and for spelling compound numbers less than one hundred.

self-regulatory, self-validating, self-medication, all-inclusive, all-encompassing, pre-1980s, post-2000, seventy-six applicants, eighty-nine missing data **BUT** over one hundred, keep open with no hyphen = one hundred fifty-six samples

People’s names in statistical tests start with a capital letter and are hyphenated.

Kruskal-Wallis test  Mann-Whitney test, one-way ANOVA unpaired t-test  \( F \)-test (the \( t \) and \( F \) are in italics),  **BUT** chi-square test (chi is a Greek letter of the alphabet, not a person’s name)

Do not hyphenate two-word phrasal adjectives beginning with an adverb that ends in –ly.

heavily protected buffer
rapidly dissolving reagent
Hyphenate phrasal adjectives before a noun; do not hyphenate the same combination when the second part serves as a noun.

- fast-growing species **BUT** the species is fast growing
- on-farm trial **BUT** the trial was conducted on farm
- small-scale farmers **BUT** farming on a small scale
- (and **NOT** small farmers unless you are referring to their size).

However, English usually has a few exceptions to most rules, and some words are always hyphenated regardless of their placement.

- old-fashioned, ill-advised

If two phrasal adjectives both have a common ending, the ending element should appear only with the second phrase, and a suspension hyphen should follow the unattached words to show that they are related to the ending element.

- middle- and upper-income respondents

**BUT** if two phrasal adjectives *begin* with a common element, a hyphen is usually inappropriate and the element should be repeated.

- left-handed and left-brained executives

When a phrasal adjective denotes an amount, a number or a period of time, the unit is singular.

- 15-year-old tree, seven-class sampling system

Avoid excessive use of hyphenated phrasal adjectives. Often rewording will improve the readability and aid comprehension of your text.

- **NOT** a two-thirds-full beaker **BUT** a beaker that was two-thirds full

For using hyphens with numbers, see the **Numbers** section below.

**Quotation marks (‘ . . . ’ and “ …”)**

Use single quotation marks for words that need to be differentiated from their otherwise normal use in a sentence.

- In this study, ‘normal dose’ consists of the two chemicals.

Reported speech or extracts from other writing are enclosed in double quotation marks.

- Smith and Jones (2009) described the technique as “one that is easily carried out, but rarely well”.
Apostrophe (’)

An apostrophe is used to indicate the omission of letters in some commonly used words.

- can’t = cannot
- it’s = it is
- doesn’t = does not
- haven’t = have not

Note that the apostrophe is NOT used with possessive pronouns.

- its average length (no apostrophe)

An apostrophe is also used to indicate possession.

- the respondent’s highest ranking (one respondent)
- BUT the respondents’ highest ranking (two or more respondents)

Parentheses (...)

As noted by the Chicago Manual of Style, “Parentheses—stronger than a comma and similar to the dash—are used to set off material from the surrounding text. Like dashes but unlike commas, parentheses can set off text that has no grammatical relationship to the rest of the sentence.”

- Three concentrations (1:20, 1:50 and 1:100) were used.

If the entire sentence is in parentheses, the period precedes the closing parenthesis; otherwise place the period after the parentheses.

- Two or more items can be included in the same set of parentheses and separated by a semicolon if they are related.

- The diameter at breast height over bark (DBHob; centimeters) was …

Square brackets […]

Square brackets should be used as “parentheses within parentheses” where they would otherwise be close together if reasonable rewording is not possible; this may occur with bibliographic wording.

- (For further discussion see Smith [1999] and Jones [2010].) OR rearrange the wording (See Smith (1999) and Jones (2010) for more discussion.)

Square brackets are used in scholarly prose mainly to enclose material—usually added by someone other than the original writer—that does not form a part of the surrounding text. In a translated work, use square brackets to enclose a word or phrase in the original language to avoid ambiguity.

- The Rottweiler dog breed was known as ‘Rottweil butchers’ dogs’ [German: Rottweiler]
Metzgerhund] because they were used to pull carts laden with butchered meat to market.

Braces { . . . }

Braces (also known as curly brackets) should not be used instead of either square brackets or parentheses. Braces have special meanings in mathematical or programming text and experts in these fields should be consulted to ensure the correct use of braces.

**Abbreviations, contractions and acronyms**

An **abbreviation** is a shortened form of a written word or phrase used in place of the whole word (definition sourced from the Merriam-Webster dictionary on line). Some abbreviations are from commonly used English (Co. = Company; PC = personal computer—no period is used with abbreviations using all upper case letters; ed. = editor) and many in scientific writing come from Latin (etc. = *et cetera* meaning “and the rest”) or Greek (ha = hectare; hecto is from the Greek ἕκατον = hekaton, meaning “hundred”). Abbreviations that are not commonly used should only be used if the term occurs more than twice in the document; otherwise write the term in full.

A **contraction** is a shortening of a word, syllable, or word group by omission of a sound or letter but keeping at least the first and last letters (Mr. = Mister; don’t = do not). Note that while the English UK style is to not use a period on a contraction, the Journal style is based on the US convention of including the period. Thus the Journal uses Mrs. and Dr. and Prof. as contractions.

An **acronym** refers to terms based on the initial letters of their various elements and is read as a single word that may be in lowercase uppercase or a mix of both. An acronym should be used without any punctuation; it is placed in parentheses following the first use of the term spelled in full. It does need to be in capitals.

AIDS          laser

Do **NOT** use an abbreviation for any term that is only used once—spell the term in full instead.

Do **NOT** use abbreviations in the captions of tables or figures unless they are also defined in the caption.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Diameter at breast height over bark (DBHOB) range by species.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NOT</strong></td>
<td>Table 1 <strong>DBHOB</strong> range by species.</td>
</tr>
</tbody>
</table>
When words that are to be abbreviated are first used and are then followed by their abbreviation in parentheses, such words in the term that would not normally be capitalized should be written in lower case when first used. Note that abbreviations and acronyms for organizations do NOT include periods after each letter. In the examples below, it is assumed that each term has already been defined earlier in the relevant abstract or main text, table or figure.

United Nations Educational Scientific and Cultural Organization = UNESCO NOT U.N.E.S.C.O.
The total phenolic content was …= The TPC was …
…while random amplified polymorphic DNA was used … = … while RAPD was used …

Abbreviations based on Latin words that are commonly used should be in italics and should only be used where space is limited, such as in table row or column headings. Consider the following as alternatives for use in running text in a paper.

. . . for example, . . . NOT . . . e.g. . . .
. . . among others. NOT . . . et al. or etc.
. . . note, . . . NOT . . . n.b. . . .

BUT Note the exception – ‘et al.’ must be used in running text to indicate there are three or more authors for a cited reference. Do NOT use the ampersand (&) in running text.

The same result was reported by Smith et al. (2006).
Smith and Jones (2010) reported that . . .

Use periods with abbreviations that end in a lowercase letter.

p. (page) pp. (pages) vol. e.g. i.e.
etc. diss. (dissertation) Mrs. Dr.
et al. (et is not an abbreviation; al. is) a.i.
(active ingredient)

Capital letters used as words, numerals used as nouns, and abbreviations usually form the plural by adding an ‘s’. To aid comprehension, single lowercase letters form the plural with an apostrophe and an ‘s’.

x’s and y’s the 1990s URLs vols.

Abbreviations for units of time can be problematical, as the SI system is silent on several commonly used units. Use the following:

second s 15 s
minute min 35 min
hour hr 24 hr 60 km.hr⁻¹
day d 8 d 12 mm.d⁻¹
week wk every 3 wk
month mth 6 mth
year yr 5 yr
a six-month delay BUT a 6 mth delay (there is no hyphen with the abbreviated unit).
Use ‘per’ with compounded units that include non SI units and spell seven times per day
NOT seven times d\(^{-1}\) or 7 time/day

Abbreviations for academic degrees use periods and should be supplemented with the academic institution and the date. Note that the title is treated as a normal publication for simplicity. The Journal style is to refer to a Master’s Thesis or MSc. Thesis, and a Doctoral Thesis or PhD. Thesis (note selected use of first letter capitals).


Use abbreviations only if necessary in an Abstract for repeating technical terms that appear more than once. You must repeat the abbreviation after the first full use of the term in the main text (and in each table or figure), as the Abstract and the main text must stand alone without requiring reference to any definition of terms in the other.

Abbreviations that do not need to be explained

1. Months of the year may be abbreviated to the first three letters without being defined (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec).
2. The abbreviations for standard deviation (SD) and standard error (SE) do not need to be defined.

Lists

Use more punctuation progressively with the amount of detail provided in the list. Use the normal rules for capitals—only for the start of sentences and proper nouns.

For a list containing short terms, no punctuation is necessary. Where only commas in the terms are required, finish each term with a semicolon and a period for the final list item.

Where one term in the list requires sentence punctuation, apply the same punctuation style to all terms in the list. The use of numbers rather than roman numerals or letters is preferred.

Example 1. A simple list

1. measurement
2. comparison
3. ranking
Example 2. A more detailed list where a comma is required in one item, so a semicolon is used to complete each item.
1. reagent was added dropwise to each sample that had been boiled, steamed or cooled until a distinct color change was noticed;
2. color of each sample was compared to a standard chart;
3. mean sample value for each solution was ranked.

Example 3. A list requiring full punctuation as multiple sentences are used in one item.
1. The reagent was added dropwise to each sample that had been boiled, steamed and cooled until a distinct color change was noticed. Three samples of each solution were tested.
2. The color of each sample was compared to a standard chart developed using 15 independent samples.
3. The mean sample value for each solution was ranked based on L*a*b* color values.

Lists included in sentences in the text should be introduced with a semicolon and finished with a period. If numbers are used to identify the terms in the list, they should use an open right parenthesis (see examples below) as this avoids confusion with any mathematical terms. Simple terms with no punctuation can finish with a comma except for the second last in the list before “and”; if punctuation is necessary in the terms, use a semicolon after each term. If each term requires more than one sentence, reword and use a normal sentence format (‘The first aim was to .... Second, the ....’).

Example 4. Simple list with no punctuation
The aims of the study were: 1) to map the forest area, 2) to identify the species and 3) to develop a regeneration plan.

Example 5. A more detailed list where a comma is required in one item, so a semicolon is used to complete each item.
The aims of the study were: 1) to map the forest area, farmland and reservoirs; 2) to identify the species; and 3) to develop a regeneration plan.

Example 6. A list requiring full punctuation as multiple sentences are used in one item.
The aims of the study were to first map the movements of the deer. This required extensive field work over several seasons due to heavy rain restricting access by the
observers. The second aim was to correlate the movements of the deer during different seasons. The third aim was ….

In sentences, use either ‘including’ at the start or ‘among others’ at the end of a list of items but do NOT use both, as ‘including’ means there are more items than are mentioned, so the ‘among others’ is repeating the same thing (a tautology). Do not use the word ‘including’ if you list all the items possible in a list.

**NOT** Three banana types were sampled, including kluay nam wah, kluay hom and kluay kai.

**BUT** Three types of banana were sampled: kluay nam wah, kluay hom and kluay kai. OR Three types of banana were sampled—namely, kluay nam wah, kluay hom and kluay kai. OR (if more than three types were sampled) The banana types sampled were kluay nam wah, kluay hom and kluay kai among others. OR (if more than three types were sampled) The banana types sampled included kluay nam wah, kluay hom and kluay kai.

Note the use of italics to show the banana types are not English words (in this case, the words use the English spelling to approximate the pronunciation of these Thai words). For spelling of Thai words in English, use [http://www.rovin.go.th/upload/246/FileUpload/416_2157.pdf](http://www.rovin.go.th/upload/246/FileUpload/416_2157.pdf)

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**Jargon and unnecessary words**

The Journal style encourages clear expression and the avoidance of unnecessary words or phrases. Technical terms and their abbreviations are essential to most scientific discussion and are covered below in the section on Numbers, symbols and units.

**NOT** As can be seen from Table 4, … BUT Table 4 shows … (note the use of the present tense)

**NOT** So, in conclusion, the study … BUT In conclusion, OR if the first sentence in the Conclusion section of the paper, simply use The study showed …
Unbiased and gender-neutral words

The Journal style avoids wording that today is widely considered to be biased or unintentionally exclusive. This applies particularly where the masculine possessive form is used to indicate both males and females (including the use of ‘his’ following the use a gender neutral noun.

(NOT The scientist must ensure his experiments are unbiased., BUT rather Scientists must ensure their experiments are unbiased.).

Do NOT use his/her and s/he as these are awkward constructions and can be confusing, especially where there are mathematical operations that use the / (slash) for division in the same text.

Avoid sexist language.

chairperson NOT chairman
humanity NOT mankind
people NOT man
spokesperson NOT spokesman
trader NOT middleman
worker NOT workman
handmade NOT man-made

However, do use gender specific terms where they form part of the scientific description of the procedures or analysis.

All people working on the boat were male and each fisherman was asked to provide details of his catch.

The widow was excluded because of her age.

Scientific and technical names and the use of italics

In academic writing, italics are most commonly used for the Latin names for the genus and species of plants and animals. The higher levels in the taxonomic hierarchy (Kingdom, Phylum/Division, Class, Order and Family) start with a capital letter but are NOT italicized or underlined. In taxonomic papers, the author who provided the original description of the species or the recognized abbreviation (not in italics) should follow the Latin name. Variety names of crops and flowers should start with a capital letter.

Tectona grandis L.f.
Dendrobium Jacquelyn Thomas
Sagittaria sp. = one species  Sagittaria spp. = two or more species
var. (variety)  cv. (cultivar)  ssp. (subspecies)  (NOT in italics)

Use common names for herbicides, insecticides and other chemicals; use trade names, enclosed in single quotes, only where necessary. Common (generic) names start with a lowercase letter, trade names with a capital. Doses should normally be stated in terms of active ingredient (a.i.).

‘Roundup®’, glyphosate, calcium carbonate

Soil types start with a capital letter.

Inceptisol, Vertisol

Where the Latin name and the English name are the same, the use of italics or using a lower case first letter can clarify the intended meaning.

*Acacia* is a genus that has adapted well to arid conditions.

**BUT** There are many acacia shrubby trees and bushes used for revegetation.

Note that the name of the genus of Australian trees is *Eucalyptus* **BUT** the English nonscientific name for the trees is eucalypts.

*Species of Eucalyptus* have been planted in many Asian countries.

There are many eucalypts planted along the boundaries of farms.

Italics are used to show words in a foreign language. If a word in a foreign language is to be compared to an English word, then double quotation marks can be used for the English word for clarity.

The Thai banana variety, *kluay leb meu nang*, is known in English as the “lady finger” banana.

### Numbers

Spell out single digit whole numbers (one through nine) and when the number (regardless of its size) is the first word in a sentence. Write large whole numbers and all numbers in decimal notation as numerals (112, 6.12, 6.0), **BUT** see below for writing some very large amounts using US-defined terms.

Seventeen plants were used
three replicates
456   -12.1   86.0   0.12 (a leading zero is used with decimal amounts less than 1)
Use commas to break numbers using many numerals into three number sections.

1,256.1  45,123.8  12,545,867.1577

For consistency when several numbers are used in the same context in a sentence, use numerals rather than spelling out single digit numbers.

There were 7 plants in Experiment A, 8 in Experiment B and 21 in Experiment C.

Large numbers (for example greater than 100,000, especially amounts of currency) can be written using the defined terms according to the US conventions. The words ‘billion’ (US = $1 \times 10^9$) and ‘trillion’ (US = $1 \times 10^{12}$) are best avoided or if desirable for currency amounts, they should be accompanied by a definition at their first use because of the differences in definition between some countries.

When spelling numbers, use a hyphen to join components of the amount less than one hundred.

Twenty-four thousand measurements were made.

Fractions should be spelled in full using a hyphen.

three-quarters of the sample  three-fifths

BUT Each plot was divided into four quarters; one quarter was used as the control and different chemical concentrations were applied to the other three quarters.

**Ordinal numbers (first, second, 11th)**

Apply the same rules as above to ordinal numbers. Note that the letters indicating the position are NOT superscripted and there is no space before them.

the first application
the 21st response
11th sample
102nd

**Scientific units**

The Journal uses the International System of Units (known as the SI units) for scientific units of measurement. See [http://physics.nist.gov/cuu/Units/](http://physics.nist.gov/cuu/Units/) for more details. There are many commonly used units that are accepted for use in addition to the main SI units.
The main Journal rules for using units are:

1. abbreviate units when used with numerals 6 mm 41.2 g Note that there is a **hard space** (will not allow the term to split at the end of a line—insert using CONTROL key + Shift key + Spacebar) between a figure and its unit.

2. do **NOT** use a period after a single unit  **NOT** … 41.2 g. was measured …  Note that if the unit is the last word in a sentence, then the sentence must finish with a period. The weight was 41.2 g.

3. do **NOT** add an ‘s’ for plurals  **NOT** 61 mm s

4. use a negative exponent, **NOT** ‘/’ or ’per’ where possible with SI units and use a period between multiple units g.L$^{-1}$  **NOT** g/L or g per L m.s$^{-2}$  **NOT** m/s$^2$ or m per s$^2$

5. write the unit in full when used without a numeral amount The length was measured in millimeters. The temperature was measured in degrees Celsius. **NOT** degrees centigrade **NOT** °C 35 g per 100 grams of reagent … where L is the length in meters. **OR** … where L is the length (meters).

Use the abbreviations in Part 1 in the table below only if necessary, but see the preferred SI unit alternative in Part 2 of the table. 📓

<table>
<thead>
<tr>
<th>PART 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit name</strong></td>
</tr>
<tr>
<td>kilowatt hour</td>
</tr>
<tr>
<td>USA ton</td>
</tr>
<tr>
<td>metric tonne (1,000 kg)</td>
</tr>
<tr>
<td>angström (1 × 10$^{-10}$ m or 0.1 nanometers = 0.1 nm in SI terminology)</td>
</tr>
<tr>
<td>parts per million</td>
</tr>
<tr>
<td>parts per billion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common unit name</strong></td>
</tr>
<tr>
<td>kilowatt hour</td>
</tr>
<tr>
<td>angstrom</td>
</tr>
<tr>
<td>parts per million</td>
</tr>
<tr>
<td>parts per billion</td>
</tr>
</tbody>
</table>
1. Note that by convention, the angström (unit abbreviation = Å) as a unit is spelt with a lowercase first letter like the watt (unit abbreviation = W) even though they are named after people.

2. Conversions for other common units to SI:  
   http://physics.nist.gov/Pubs/SP811/appenB8.html

Area units

1. The SI unit for area is hectares NOT rai. As the Journal is published for an international audience, where possible, all area units should be square millimeters (mm²), square centimeters (cm²), square meters (m²), hectares (ha) or square kilometers (km²).

2. If an area is reported in rai, then include a conversion factor from 1 rai to 1 ha or follow immediately in the text with the equivalent amount in hectares.

   The farmers’ survey reported an average paddy field size of 2.3 rai (1 rai = 0.16 ha).

   OR  The farmers’ survey reported an average paddy field size of 2.3 rai (0.37 ha).

Other recommendations

page 8  BUT 8 pp.
25% (no space between number and % sign)
15 °Brix NOT 15°Brix
… a magnification of ×50 (no space after ×)

The plots were 20 × 20 m (the unit is not repeated if it is the same for both numerals joined by the × sign)

The solution was diluted to 1:100.
(no space either side of the ratio sign)

Centrifugation at 300xg (no space before or after ×; the ‘g’ = gravity, is in italics to avoid any confusion with g = gram)

For units not covered by the SI abbreviations, treat the unit as a normal English word with a plural ‘s’. Use ‘per’ rather than a negative exponent or the ‘/’ with such words in compound units.

   eight times per hour  NOT 8 time.hr⁻¹
   NOT 8 times/hr

   35 g per 100 grams of reagent
Very large amounts of money are written in words to avoid a long string of zeroes that may be hard to interpret, though an alternative in such cases is to use scientific notation.

Where the main unit of a currency is broken down into hundredths (for example, the US dollar and Thai baht), small amounts of whole units should include the decimal point and two trailing zeroes. See the Numbers section above for additional rules that also relate to currency amounts. Note that the unit is spelt with a lowercase first letter (dollars, baht).

While any amount preceded by the $ sign is generally accepted as being US dollars, to avoid ambiguity with any other currency, the Journal style advocates the use of the 3-letter currency code with some more common codes shown in the table below. In tables, where the same currency is used in a row or column, the currency symbol should be included in the heading and not used in cell entries.

<table>
<thead>
<tr>
<th>Currency</th>
<th>Symbol</th>
<th>Code</th>
<th>Unicode (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US dollar</td>
<td>$</td>
<td>USD</td>
<td>0024</td>
</tr>
<tr>
<td>Euro</td>
<td>€</td>
<td>EUR</td>
<td>20AC</td>
</tr>
<tr>
<td>Japanese yen</td>
<td>¥</td>
<td>JPY</td>
<td>00A5</td>
</tr>
<tr>
<td>Chinese yuan renminbi</td>
<td>¥</td>
<td>CHY</td>
<td>00A5</td>
</tr>
<tr>
<td>British pound</td>
<td>£</td>
<td>GBP</td>
<td>00A3</td>
</tr>
<tr>
<td>Thai baht</td>
<td>฿</td>
<td>THB</td>
<td>0E3F</td>
</tr>
</tbody>
</table>

See [http://www.ratesfx.com/resources/symbols.html](http://www.ratesfx.com/resources/symbols.html) for the 3-letter currency codes that are used internationally. For currencies not covered by this website, provide your abbreviation in parentheses after the first use of the currency abbreviation.

Some of the more common codes and their Unicode (hex) equivalents are:

Note: Do **NOT** use the symbols in the above table, but instead, use the Code.
Consider providing a conversion factor to USD if you are using a less common unit of currency.

(USD 1 is approximately THB 32)

**Probability**

Probability levels should be described using \( P < 0.05 \) or the 95% confidence level. Note that the ‘\( P \)’ is a capital letter (upper case) in italics and there is a fixed space either side of the ‘<’. The fixed space avoids breaking the term at the end of a line which makes the text difficult to interpret correctly.

**Times and dates**

For times, the 24-hour clock system should be used to avoid any possible ambiguity. To ensure that any text indicating a time is not split over two lines, use a non breaking space between the digits and the word ‘hours’. Note that this is one case where the plural ‘s’ is added to the time unit spelled in full.

1400 hours 0900 hours

Avoid a.m. and p.m. as there is often unintended ambiguity about the use of 12 a.m. and 12 p.m.

The oxygen rate was measured automatically at 12 noon. (= 1200 hours, which would be pronounced as “twelve hundred hours”)

Do NOT use a comma in the date. Provide the day first and do NOT use ordinal numbers (7th or 7th) in dates. In text, do NOT abbreviate the month (however the first three letters of a month—Jan, Mar, … Dec—can be used in a figure or table without being defined). Use four digits for the year.

21 August 1953 29 February 2008

Ranges in dates should accurately reflect the period intended in the text.

2005–2010 = six complete years (from 1 January 2005 to 31 December 2010)
2010 = full calendar year from 1 January 2010 to 31 December 2010
1990s = 10 years (decade) from 1990 to 1999
from March to May = a three-month period (March, April and May)
BUT avoid between March and May as this could be either the three-month period including the two months mentioned OR the time excluding the two months mentioned = only the month of April

Be explicit if there is a chance of misinterpretation.
The crop was planted in early May and harvested in late June.
OR better
The crop was planted on 4 May and harvested on 24–25 June.

Equations

All equations in the main text must be numbered consecutively commencing with Equation 1.

Important style points:

1. All numbers and symbols in an equation must be clearly legible using Times New Roman font size greater than or equal to 8.
2. Start each equation on a new line; end the preceding sentence with a colon (:).
3. Indent one tab stop before inserting the equation.
4. Complex equations can be inserted as an image but use Times New Roman font style wherever possible.
5. Long equations can be wrapped over two or more lines; make the break at a logical point before an operand.
6. Right justify the number for each equation using parentheses; place the equation number on the last line of the equation where more than one line is used.
7. Define all terms used in the equation in the text immediately following, using an indent and “where”.
8. Define all terms using “is” rather than “=”.
9. Refer to specific equations in the text using an uppercase first letter (‘as shown in Equation 2’) but use a lowercase first letter when talking in general (‘Several equations were developed …’).
10. Include a reference source for an equation immediately before presenting the equation (‘The formula is shown in Equation 3 (Smith and Jones 2011): ’).
11. Use the same number to refer to an equation in a table or figure as is used in the main text. The equation does not need to be re-presented in the table or figure.
Example 1

The conversion $\alpha$ can be determined in terms of the mass loss from the thermogravimetric curves using Equation 1 (Hall et al., 1989):

$$\alpha = \frac{m_0 - m}{m_0 - m_\infty}$$  \hspace{1cm} (1)

where $m_0$, $m$ and $m_\infty$ are the initial mass, the actual mass and the final mass of the degradation process, respectively, all measured in milligrams.

Example 2

The yield was calculated by subtracting 15% of the moisture content from the total air-dried weight (Equation 1):

$$\text{Yield} = \text{Air-dried weight} \times 0.85$$  \hspace{1cm} (1)

where the yield and total air-dried weight are expressed in grams of dry rubber per tree per tapping.

Tables and Figures

General

1. Indicate the location of each table or figure within the text at the appropriate place. Note that tables and figures should be inserted in the document in a place after they have been first mentioned in the running text.
2. Use Times New Roman font for all text and in tables or figures do NOT use a font size smaller than 7.
3. All terms used in a figure or table must be defined in the caption, legend or footnotes (see Example 2 below). Note that the abbreviations SE (standard error) and SD (standard deviation) do NOT require a definition.
4. Do NOT include units in the table or figure caption, but place them in the column headings or in parentheses on the axes of graphs.
5. Use lower case letters (not bold or italics) to describe subcomponents of a table or figure if necessary (Table 5a NOT Table 5A; Figure 1a NOT Figure 1A).
6. Footnotes in a table or in the caption for a figure used to define abbreviations should be in Times New Roman 10 font and use an equals sign (=) followed by an uppercase first letter and completed with a period. Do not use a superscript to indicate abbreviations or to define terms but simply use the form Abbreviation = Definition (first word of the definition starts with a capital letter).

\[ a = \text{Average of six measurements.} \]
\[ \text{DDF = Dry deciduous forest; WEF = Wet evergreen forest.} \]

**Tables**

1. The only lines in a table should be horizontal lines above and below the main column headings and at the bottom of the table, above the footnotes (see Examples 1 and 2 below).
2. Align column headings to the center.
3. Number alignment in columns
   a. Align nondecimal numbers as shown in Column 1 in Example 1 below
   b. Align on the decimal point for mixed decimalized numbers (see Column 2 in Example 1 below)
   c. Align on the “×” for numbers with exponents (see Column 3 in Example 1 below)
4. Include notes immediately under the table. To avoid confusion in reading table entries, where appropriate, use a lowercase superscript letter for notes referring to numbers and a number superscript for notes referring to words.

\[ 12.34^a \quad A^1, B^2 \]

**Example 1**

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>45,562</td>
<td>34.12</td>
<td>(6.10 \times 10^1)</td>
</tr>
<tr>
<td>421</td>
<td>1.569</td>
<td>(1.4 \times 10^{-7})</td>
</tr>
<tr>
<td>8,910</td>
<td>8.0</td>
<td>(2.4 \times 10^{-2})</td>
</tr>
<tr>
<td>19</td>
<td>0.1</td>
<td>(8.6 \times 10^{-2})</td>
</tr>
</tbody>
</table>

Footnotes go here in times New Roman 10 and each footnote ends with a period.
**Example 2**

**Table 1** Viability of canine cumulus-oocyte complexes (COCs) after solid surface vitrification (SSV).

<table>
<thead>
<tr>
<th>Group</th>
<th>Treatment</th>
<th>SSV</th>
<th>No. of viable COCs / total COCs</th>
<th>Proportion of viability (mean ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fresh control</td>
<td>no</td>
<td>132/154</td>
<td>84.77 ± 3.27&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>2</td>
<td>0.5M trehalose 20 % FBS 1.5 M EG</td>
<td>no</td>
<td>131/184</td>
<td>73.36 ± 2.22&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>3</td>
<td>0.5M trehalose 20 % FBS 3 M EG</td>
<td>no</td>
<td>138/184</td>
<td>74.40 ± 3.11&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>4</td>
<td>0.5M trehalose 20 % FBS 1.5 M EG</td>
<td>yes</td>
<td>147/190</td>
<td>72.13 ± 1.36&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>5</td>
<td>0.5M trehalose 20 % FBS 3 M EG</td>
<td>yes</td>
<td>137/190</td>
<td>72.40 ± 2.77&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Six replicates were performed.

FBS = Fetal bovine serum; EG = Ethylene glycol.

<sup>a,b</sup> = Significantly different (P < 0.05).
Figures

1. Color should only be used where it is necessary to highlight a feature that cannot be shown clearly in black and white.
2. Make sure multiple curves or bars in graphs and charts are clearly differentiated in black and white. While the online (web-based) version of the Journal is in color, the printed on paper copies of the Journal are usually in black and white (B&W), so the colors you have used will not be apparent. The author should check that the color pictures show noticeable differences in B&W. If not, then an alternative B&W version should be supplied for the printed version of the paper in a separate file, and then the color version will be used only in the online version.
3. Where possible, legends should be placed at the bottom of the chart or graph.
4. Figures must have a resolution of 300 dots per inch or more and should be saved in TIFF format (without compression).

While color may enhance the details presented and aid in interpretation in the web-based version of the Journal, the Journal is usually published in paper form in black and white and so any information or features must be clearly legible in black and white (see Examples 1 and 2).

1. Use dotted and dashed lines to show differences in graphs
2. Use crosshatching to distinguish between many different bars in a chart
3. Use dark text on a light background and vice versa
4. Do NOT fill graphs with a background color or use 3D effects unless there are three axes on the graph

In figures, provide a clear high quality image with all subcomponents included. Do NOT add text boxes over parts of a figure in a manuscript as these can become separated from the image.
Example 1

Format style – lowercase letter in a white box on the image edge in top right if possible, otherwise in another corner if it will obscure information. Subfigures with separate outline at weight ¼ point

Figure 2 Insert caption here and end it with a period.

Example 2

Format style – line (Times Roman, 0.75 point, single line, black color) around image, insert lowercase letter in top right corner if possible (as with box b), otherwise use another corner so that important information is not obscured

Figure 7 Insert caption here and end it with a period.
Example 3

Format style – no line around image, insert lowercase letter above the image

Figure 7 Insert caption here and end it with a period.

Referencing

There is detailed information on the referencing format used by the journal on the website—see http://kasetsartjnatsci.kasetsart.org/ and click on the Literature Cited Format tab.

Important points are:

1. The Journal uses the name-year referencing system.

2. **In-text**
   a. Use *et al.* (in italics) for three or more authors

   Smith *et al.* (2010) reported that …

   b. Where more than one reference is cited in parentheses, do not use “and” before the last one in the list

   However, three studies (Smith and Watson, 2009; Jones *et al.* 2010; Walker, 2012) reported conflicting results.

   c. In running text, use normal grammatical structures


3. **Literature Cited section**
a. Check carefully that only single spaces are used between the components in the reference.
b. Use double line spacing and indent after the first line.
c. **Bold** is used only for
   i. the names of journals (including the period at the end of the title)
   ii. the title of publications (for example, books, proceedings or reports) and includes the period at the end of the title.
d. **Italics** are used only for
   i. the word *In* where it details the publication the reference is contained in where editors are acknowledged
   
   pp. 1234–1245. In G Smith, (ed.).
   
   ii. Scientific names of plants and animals.

   *Neospora caninum*

e. Use the following abbreviations

<table>
<thead>
<tr>
<th>Term</th>
<th>Abbreviation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>editor</td>
<td>(ed.)</td>
<td>G.J. Smith, (ed.). <em>Name of publication.</em></td>
</tr>
<tr>
<td>editors</td>
<td>(eds.)</td>
<td>G.J. Smith and P. Jones, (eds.). <em>Name of publication.</em></td>
</tr>
<tr>
<td>pages</td>
<td>pp.</td>
<td>pp. 1234–1245. <em>In ... OR 234 pp.</em></td>
</tr>
</tbody>
</table>

f. Publishing house name—provide the full name and the city, state (if applicable) and country. In keeping with the revised Chicago Manual of Style standard, even well known cities such as New York, Paris and Bangkok should be qualified with the country and state (if applicable, noting that New York is in New York state which has the state abbreviation of NY; thus New York, NY, USA). Note also the punctuation used—a period after the publishing house name and commas between the city, state and country. Two letter state codes are acceptable for the USA states; see: [https://www.usps.com/send/official-abbreviations.htm](https://www.usps.com/send/official-abbreviations.htm) for a full list.

   McGraw-Hill. Columbus, OH, USA.

   Cambridge University Press. Cambridge, United Kingdom.

4. Use a colon plus a space between the volume and the page numbers with an en dash (–) in the page range and no commas in the number.


5. Check examples of references in recent issues of the Journal or contact the editorial staff via [rdispm@ku.ac.th](mailto:rdispm@ku.ac.th).

6. Web-based references should use the standard format for in-text referencing—for example, *US Postal Service (2012)*—and the following format in the Literature Cited section.

Note:
1. Square brackets are used
2. Provide the date the reference was accessed with no commas included
3. Provide the full link to the reference (not just its associated major webpage)
4. Do not add a trailing period to the web address—the period to indicate the end of the reference segment is always located outside the square brackets.

Definite article (the) and indefinite article (a/an)

Definite article

The definite article is used to: 1) indicate a specific object that has been previously mentioned and does not need further description (the experiment was carried out in triplicate = a shortened form of the experiment that is being discussed) or 2) to describe something that is about to be mentioned (the results of the study). The definite article can be used with nouns that are singular (the result) or plural in number (the results).

For geographical features, do NOT use ‘the’ before

names of most countries/territories: Laos, Cambodia, Thailand; BUT the Netherlands, the Philippines, the United States

names of cities, towns/provinces or states: in Tokyo, around Petchabun province, from Michigan

names of streets: in Sukhumvit Rd. BUT on the main road into the village

names of lakes and bays: on Lake Superior, near Hudson Bay except with a group of lakes like the Great Lakes BUT use ‘the’ where the descriptor precedes the location = the Bay of Siam

names of mountains: climb up Mount Everest, located on Mount Fuji BUT use with ranges of mountains like the Andes or the Himalayas or some special places like the Matterhorn

names of continents: in Asia, across Europe
names of islands: on Easter Island, near Maui, travel to Key West BUT use “the” with island chains = go to the Maldives, visit the Andaman islands

Geographical features and ‘the’

For geographical features, DO use ‘the’ before

names of rivers, oceans and seas: the Chaopraya River, the Pacific Ocean, the Andaman Sea

points on the globe: the Equator, the Tropic of Cancer

geographical areas: the Middle East, the West, BUT in Northeast Thailand

deserts, forests, gulfs, and peninsulas: the Sahara, the Gulf of Thailand, the Black Forest, the York Peninsula

Do NOT use the definite article before

languages: Thai is a tonal language. BUT use ‘the’ if referring to the population as a whole the Thais enjoy playing badminton (and NOT before the name of a sport).

academic subjects: Computer science is more popular than chemistry. BUT use ‘the’ when referring to groups of subjects The sciences are less popular than the arts.

Indefinite article

The indefinite article is used to identify nonspecific things, people or objects that are not singled out from the general class being discussed (a problem, an average year, a diseased piece of fruit). The indefinite article can be used with nouns that are singular (a sample of 17 pigs) or uncountable (a herd of pigs) but not with plural nouns.

In writing as in speaking, the choice between ‘an’ and ‘a’ depends on the sound of the next word—if it is a vowel sound then use ‘an’; for a non vowel sound use ‘a’.

a result (nonvowel sound)
an experiment (vowel sound)
a horse (nonsilent ‘h’ sound)
a university (this is a noun that when pronounced starts with a consonant sound (we say ‘yooniversity’ not “ooniversity”)

BUT an hour (when the ‘h’ is silent, use ‘an’)

These rules also apply with acronyms and abbreviations.

a PhD. Thesis BUT an MSc. Thesis
(pronounce as “em es cee”)

For more information and examples, see the following link:

http://owl.english.purdue.edu/owl/resource/540/01/

**Prepositions used with places and activities**

Prepositions used to show location should be used in the following manner.

**in** = for a country, state, province, town, village, organization or Department, from the water, underground or for a general topographical feature

in Thailand, in Petchabun province, in Baan Rai, in KURDI, in the Department of Statistics, in the Chaophraya river (under the water), in the B soil horizon, in the mountains, in the forest

**on** = for a specific geographical land feature or defined area of land or road or river

on the west side of the mountain, traffic on the Chaophraya River (not under the water), on farmland at the Research Centre, on the dairy farm, on the river, on the main road, on the Kasetsart University campus

**at** = for a location or a point, or to describe locations at firms, companies, workplaces and educational institutions in a particular place

The samples were stored at the Research Centre.
The stream samples were taken at the first river bend after the outlet.
**Passive versus active sentence structures and the use of the past tense**

Academic reporting has traditionally used a **passive verb structure** (known as the passive ‘voice’) since it is often considered important to move the focus of the discourse from humans to the actions, processes and events being described. Furthermore, the **past tense** is used to describe the processes and results for scientific study.

In total, 14 case studies were recorded. The data were analyzed using one-way analysis of variance.

However, references to tables and figures use the **present tense** and can be active or passive.

The results are shown in Table 4. (passive) Figure 1 shows that Experiment 2 produced the largest amount of NO$_2$. (active)

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**English spelling for Thai provinces**

While there is considerable variation in the English spelling for many Thai words (even for the same word on road signs within Bangkok), the Journal style for the accepted spelling of all Thai provinces and other Thai words used in English is consistent with the following links:


Thus, the Journal style uses: Chachoengsao, Nakhon Pathom, Nakhon Si Thammarat, Prachuap Khiri Khan