Critical analysis of a research paper

Critical analysis is the detailed examination and evaluation of another person's ideas or work

Being 'critical' does not always mean being negative or disagreeing with the premise of a particular text. Instead, being 'critical' refers to the act of questioning information, arguments or content presented in a text and offering an evaluation of it (UNSW 2015)

Critical analysis of a research paper using knowledge gained from the subject

- Paper published in **2022 at the latest**
- Free selection of paper from one of the following journals:
  - Nature (https://www.nature.com/)
  - Nature Genetics (https://www.nature.com/ng/)
  - Nature Plants (https://www.nature.com/nplants/)
  - GigaScience (https://academic.oup.com/gigascience)
- Paper has to deal with an agriculturally relevant species and one of the following topics:
  - Report of genome assembly
  - Report of genome re-sequencing study, for example genomic diversity analysis
  - Report of pangenome study
  - Report of gene expression based study (for example transcriptomic response to stress)

- 2 A4 pages maximum, font 12 Arial, 1.5pt spacing

Cover page

- Your name, student number, title of the paper and URL/DOI of the paper

Introduction

- Short information about the paper. Summary of main aims and findings.
- Why did you choose this paper

Main body (can have sub-headings for each of the paper sections)

- Abstract
  - Does it reflect content of the paper?
  - Does it describe the main findings?
  - Is it accessible to more general audience?
- Introduction
  - Does it give sufficient background to understand the rationale for research?
  - Does it link/refer to previous research?
- Methods
  - To your knowledge, are the methods appropriate?
  - Are they described in sufficient details (for example software and software version) to reproduce the research?
  - Are the methods state of the art or is the approach outdated? (for example short reads used for assembly when long reads could be produced)
  - Is the data/code publicly available?
  - Can you pinpoint any weaknesses of the study design?

- **Results**
  - Can the results section be easily followed? Are there subheadings to help guide the reader?
  - Are the figures readable and is the information well presented? Are the legends/captions sufficient to understand the figures even without reading the whole text in detail?
  - Do the text and figures complement each other well or are there repetitions which could be avoided? Are all figures/tables mentioned in the text? Does the text expand on them?
  - Are there sections of text or figures/tables which are difficult to understand?
  - Do the results appear reliable? Are there sufficient quality checks?
  - Can you see any inconsistencies in between the figures and text?
  - Are there any potential errors in the results section?
- **Discussion**
  - Does the discussion provide interpretation, described significance of the results?
  - Does the interpretation arise logically from the data? Is the discussion interesting? Does it point out any conclusions/inferences not immediately obvious from the results
  - Does the discussion mention limitations of the study and points to future research?

Conclusion

- Did you like the paper? What did you like about it? What did you not? Could it be mostly understood by more general audience?
- Did you learn anything new?
- Would you recommend it to others? Why yes, why not?