



Format and Guedelines for Writing Scientific Papers on JSA (font 16)

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ABSTRACT (font 11)

Journal of Soilscape and Agriculture (JSA) is a scientific periodical publication that presents scientific articles, reviews, conceptual thoughts, and research results in the field of soil science and has tropical characteristics. The abstract section contains contents of the background, objectives, results, discussions, and conclusions obtained from the research that has been carried out. The abstract contains a **maximum of 250 words** and is written in good English. **Abstract font using Times New Roman font size 11 with 1 space using justify format.** Specific keywords that describe the character of the script to make it easier for the script search process. The keyword used is a maximum of 5 words (font 10).

INTRODUCTION (font 12)

The growth of motor vehicles in Indonesia has shown a very rapid trend over the past two decades. Data indicate that the growth rate of motor vehicles has reached 15% per year, equivalent to 7.9 million units annually (Winarno, 2014). This condition is not only driven by the large population, which reaches around 240 million people, but also by the socio-cultural characteristics of Indonesian society, which tend to replace vehicles periodically to follow trends and reinforce social status. On the other hand, the absence of government regulations restricting vehicle ownership has further accelerated this growth. From an economic perspective, this phenomenon contributes positively to the automotive and transportation sectors, but at the same time generates increasingly concerning negative impacts on the environment.

One of the most tangible consequences of the rising number of motor vehicles is exhaust emissions. Emissions released into the atmosphere contain various pollutants, including carbon monoxide (CO), nitrogen oxides (NO_x), hydrocarbons (HC), and particulates, which affect both human health and environmental quality. Through Government Regulation No. 61 of 2011 concerning the National Action Plan for Greenhouse Gas Emission Reduction, the Indonesian government has set a target of reducing emissions by 26% through domestic efforts and 41% with international support by 2020 (Momon & Astuti, 2020). This target underscores the national commitment to climate change mitigation, although in practice, the challenge of controlling emissions from the transportation sector remains significant. Motor vehicles have now become the main mode of transportation in Indonesia, both in urban and rural areas. The increase in vehicle numbers is often proportional to urbanization rates and population growth. As urban density rises, transportation demand also increases, thereby exacerbating congestion and air quality deterioration (Susantoro & Parikesit, 2004; Amin, 2017). Urban expansion and population growth are two interrelated factors that intensify pressure on both transportation infrastructure and the environment.

A concrete example can be observed in Kendari City, the capital of Southeast Sulawesi Province, which has experienced considerable population growth, migration, and urbanization. Data from Statistics Indonesia (BPS, 2023) report that Kendari covers an area of 265.79 km² with a population of 364,220 people. In line with this, the number of motor vehicles in the city has also increased significantly: from 96,050 units in 2020 to 116,515 units in 2021, although it slightly declined to 109,989 units in 2022 according to data from the Kendari City SAMSAT Office. This surge in vehicles directly impacts traffic density and urban air quality. Air pollution itself is defined as the entry of harmful substances into the atmosphere that can degrade environmental quality and cause human health problems. Sources of air pollution can be natural, such as volcanic eruptions, or anthropogenic, arising from human activities including transportation, industry, and fossil fuel combustion (Simandjuntak, 2013). In the transportation sector, the type of fuel used also influences the level of emissions produced. Fuels with lower octane numbers tend to result in poor combustion quality and higher emissions, whereas high-octane fuels such as Pertamina Turbo (RON 98) or Pertamina (RON 92) produce lower emissions compared to Premium (RON 89) (Khasanah et al., 2019).

The Pasar Baru intersection in Kendari City, located within the Central Business District (CBD), is a traffic-congested point with high potential for exhaust emissions due to stop-and-go movements, congestion, and long waiting times. Carbon monoxide (CO) is selected as the focus of this study because of its adverse impacts on health, its contribution to climate change, and its high concentration in urban areas. This study analyzes CO emissions at the intersection to map the potential dispersion of pollutants, evaluate compliance with ambient air quality standards, and provide recommendations for sustainable transportation policies in Kendari City.

METHODS (font 12, UPPERCASE)

Location and Time (*Sub-subchapters can be adjustable, capitalized each word)

This research was conducted over a period of two (2) months, from November to December 2023. The study site was located at the Pasar Baru Intersection, Wowawanggu Subdistrict, Kadia District, Kendari City, Southeast Sulawesi Province. The coordinates of the research location are 122°26'54''–122°28'14''E and 3°56'18''–3°59'46''S.

Method of Collecting Data

The data collection techniques employed in this study consisted of several stages. First, an observation technique was conducted by directly examining the conditions around the research site and recording the geographic coordinates using GPS. Second, sampling was carried out using a Carbon Monoxide Meter to measure CO concentrations at Jl. M.T. Haryono (A). Measurements were taken during three observation periods over seven days, namely in the morning (08:00–09:00 WITA), midday (13:00–14:00 WITA), and afternoon (16:00–17:00 WITA). In addition, a traffic counting method was applied to manually record the number of motor vehicles passing along the road (Aryandi & Munawar, 2014). Third, the field data were processed using Microsoft Excel to calculate CO emission concentrations and present the measurement results, while the WRPLOT View application was employed to illustrate monthly wind direction and speed patterns for 2023 in the form of wind rose diagrams.

Data Analysis

Ambient CO Concentration at Initial Sampling Point

Ambient CO concentration was measured over seven days at three intervals (morning, midday, and afternoon) using a Carbon Monoxide Meter. Sampling points were located at the Pasar Baru intersection in Kendari City: Jl. M.T. Haryono (A, east–west), Jl. Brigjen M. Yoenes (B, south–north), Jl. M.T. Haryono (C, west–east), and Jl. Brigjen M. Yoenes (D, north–south). Analysis focused on Jl. M.T. Haryono (A) due to prevailing westward winds in 2023, represented by wind rose diagrams generated with WRPLOT View. CO values in ppm were converted to $\mu\text{g}/\text{m}^3$ using the standard SI conversion formula (Marwati, 2020).

CO Emission Concentration Using the Gaussian Model

Traffic volume was first determined through traffic counting, classifying vehicles by type and time of passage. Emission rates were then calculated using the Gaussian line-source model (Handriyono & Setyo, 2021). The model incorporated emission factors, vehicle counts, observation periods, and meteorological stability parameters to estimate vertical dispersion (σ_z) and resulting ground-level concentrations.

Final Concentration Analysis

Final concentrations were obtained by combining ambient CO levels at the initial sampling point with emission concentrations derived from the Gaussian model.

Spatial Distribution of CO Emissions

Spatial distribution was analyzed using wind rose data from WRPLOT View and mapped in ArcGIS. The resulting maps employed color gradients (red to green) to illustrate CO concentration levels at monitoring points. Map legends provided essential interpretation, while color perception principles were applied to enhance depth and clarity (Sterba & Blaha, 2015).

RESULTS AND DISCUSSIONS (font 12)

Sub-subchapter of Results and Discussions (*Sub-subchapters can be adjustable)

The results in general are narratives of the results of data analysis and are presented descriptively or through illustrations (tables or pictures), which are included separately but are given instructions for placing them in the content of the manuscript. While the discussion is a logical argumentation narrative to interpret and give implications for the results obtained, including showing the limitations of the findings (if any).

The discussion is organized into a series of paragraphs (opening, connecting, and closing). The opening paragraph is a statement of thoughts or arguments. The supporting paragraph is a statement of support that comes from a number of relevant libraries to support the argument, while the closing paragraph is a general statement such as a small conclusion.

In the manuscript of conceptual thinking resulting from a review of several research results and books, this section is replaced with several topic titles based on the study of research results and book sections that support the integrity of the concepts presented.

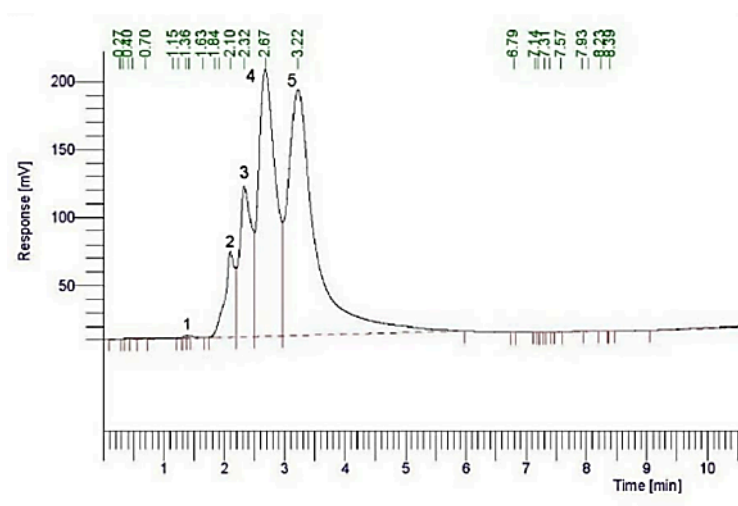


Table 1. Application of amount of fertilizers and manure from 1981 to 2015 (Exampel for data presentation)

Treatment	Basal fertilizer		
	N (kg N/ha)	P (kg P/ha)	K (kg K/ha)

	Urea	Ammonium phosphate	Manure
Wheat			
Control	0	0	0
N	30	40	15
NP	24	35	15
NPK	30	10	20

CONCLUSIONS (font 12)

Conclusions are answers to predetermined goals and are not intended as a summary of results. Conclusions are generalizations from the results of research and the author's arguments or brief statements which are the essence of the Results and Discussion section or the results of testing various related hypotheses and can be supported by reference libraries. Written in 1 or 2 paragraphs.

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References are sources from credible and scientifically justifiable sources. References are from journal articles/papers, news proceedings, personal communications, or other written sources. Accountable references contain the author's name, year of publication, year of authorship, title, publisher, DOI, volume, and number, as well as specific access times for the internet. The reference is written in the APA (American Psychological Association) style. It is highly recommended to use Mendeley, Zotero, and End Note reference manager software.

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