LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	Growth Models and Age Estimation of Rice using Multitemporal Vegetation Index on Landsat 8 Imagery
Jumlah Penulis	:	4 orang (**Abdi Sukmono***, Arief Laila Nugraha, Arsyad Nur Ariwahid, Nida Shabrina)
Status Pengusul	:	penulis ke-1
Identitas Jurnal Ilmiah	:	a. Nama Jurnal : Advances in Science, Technology and Engineering Systems Journal (ASTESJ)
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		Alamat Artikel : https://www.astesj.com/publications/ASTESJ_050563.pdf
		g. Terindex : Scopus, Q3

Kategori Publikasi Jurnal Ilmiah (beri ✓pada kategori yang tepat) :

- [√] Jurnal Ilmiah Internasional
- [ ] Jurnal Ilmiah Nasional Terakreditasi
- [ ] Jurnal Ilmiah Nasional Tidak Terakreditasi

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b. Ruang lingkup dan kedalaman pembahasan (30%)	8,5	8,7	8,6
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d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	8,6	8,6	8,6
Total = (100%)	**28,7**	**28,8**	**28,75**
Nilai Pengusul = (60% x 28,75) = 17,25			

Semarang, 14 Juni 2022

Reviewer 2

Bandi Sasmito, S.T., M.T.
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Reviewer 1

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- [ ] Jurnal Ilmiah Nasional Terakreditasi
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Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Akhir Yang Diperoleh
	Internasional [30]	Nasional Terakreditasi [ ]	Nasional Tidak Terakreditasi [ ]	
a. Kelengkapan unsur isi jurnal (10%)	3,00			3
b. Ruang lingkup dan kedalaman pembahasan (30%)	9,00			8,5
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9,00			8,6
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	9,00			8,6
Total = (100%)	**30,00**			**28,7**
Nilai Pengusul = (60% x 28,7) = 17,22				

Catatan Penilaian artikel oleh Reviewer :

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   Unsur artikel lengkap, sesuai dengan standar publikasi jurnal yang terdiri dari abstrak, pendahuluan, metode, hasil dan pemabahasan, kesimpulan serta daftar pustaka. Setiap unsur juga diulas sesuai dengan petunjuk publikasi dari penerbit.
2. **Ruang lingkup dan kedalaman pembahasan:**
   Artikel ini membahas tentang pengembaangan algoritma baru untuk estimasi usia tanaman padi menggunakan teknik multitemporal citra satelit yang dibahas secara detail. Hasil dan pembahasan telah dibahas secara menyeluruh tentang pembentukan model, uji model dan hasil akurasi yang didapatkan.
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Data yang digunakan merupakan data primer up to date dan valid yang diakusisi tahun 2019. Dalam pengembangan algoritma juga telah menggunakan berbagai referensi metode terkini dan melibatkan 25 referensi yang up to date.
4. **Kelengkapan unsur dan kualitas terbitan:**
   Unsur manajemen jurnal cukup lengkap yang didukung oleh OJS yang mudah diakses serta tim editor dan reviewer dari berbagai negara. Jurnal ini juga telah terindeks database Scopus.

Semarang, 14 Juni 2022
Reviewer 1

Moehammad Awaluddin, S.T., M.T.
NIP. 197408212005011001
Unit Kerja : Teknik Geodesi FT UNDIP

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	Internasional [30]	Nasional Terakreditasi [ ]	Nasional Tidak Terakreditasi [ ]	
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b. Ruang lingkup dan kedalaman pembahasan (30%)	9,00			8,7
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9,00			8,5
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	9,00			8,6
Total = (100%)	**30,00**			**28,8**
Nilai Pengusul = (60% x 28,8) = 17,28				

Catatan Penilaian artikel oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi jurnal:**
   Manuskrip ini telah memiliki kelengkapan unsur jurnal yang sesuai dengan standar publikasi jurnal internasional yang terdiri dari abstract, inrtoduction, method, result and dicussion dan conclussion. Serta didukung oleh 25 referensi yang up to date.
2. **Ruang lingkup dan kedalaman pembahasan:**
   Substansi isi jurnal ini membahas tentang modifikasi algoritma estimasi umur padi dari data citra satelit. Secara subtansi ini sesuai dengan bidang penulis yaitu bidang geodesi dan geomatika. Pembahasan modifikasi algoritma ini telah diuraikan dan didiskusikan mendetail dari proses modelling hingga uji akurasi algoritma baru hasil modifikasi.
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Jurnal ini telah didukung dengan data primer umur padi lapangan yang valid dan up to date (sesuai dengan perekaman citra satelit tahun 2019) serta menggunakan analisis multitemporal dan algoritma dasar yang terkini atau sedang berkembang di bidang geodesi dan geomatika
4. **Kelengkapan unsur dan kualitas terbitan:**
   Jurnal ini didukung oleh OJS yang interaktif dan memiliki unsur yang lengkap, baik dari sisi tim edirorial-reviewer dan manajemen penulisan. Jurnal ini terbit secara berkala dan terindeks SCOPUS Q3.

Semarang, 14 Juni 2022
Reviewer 2

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Growth models and age estimation of rice using multitemporal vegetation index on landsat 8 imagery

Sukmono, Abdi ; Nugraha, Arief Laila; Ariwahid, Arsyad Nur; Shabrina, Nida

Save all to author list

[a] Department of Geodetic Engineering, Faculty of Engineering, Diponegoro University, Semarang, 50275, Indonesia

Abstract

Age and growth are two essential rice biophysics parameters used to determine the health parameters and production rate. The spatial data of both parameters can utilize remote sensing technology, which in turn makes use of several vegetation indices to achieve accurate estimation. However, due to the rapid changes in rice plants' characteristics, it is essential to study vegetation index utilization using a multitemporal method to improve its accuracy. Therefore, this research uses a multitemporal Enhanced Vegetation Index (EVI) to estimate rice's age and growth model. The multitemporal EVI patterns were observed to estimate the Time Early Planting (TEP) and the maximum EVI value of rice in an area. The results showed that the maximum EVI value in the rice fields of Demak Regency has a class range of 0.4

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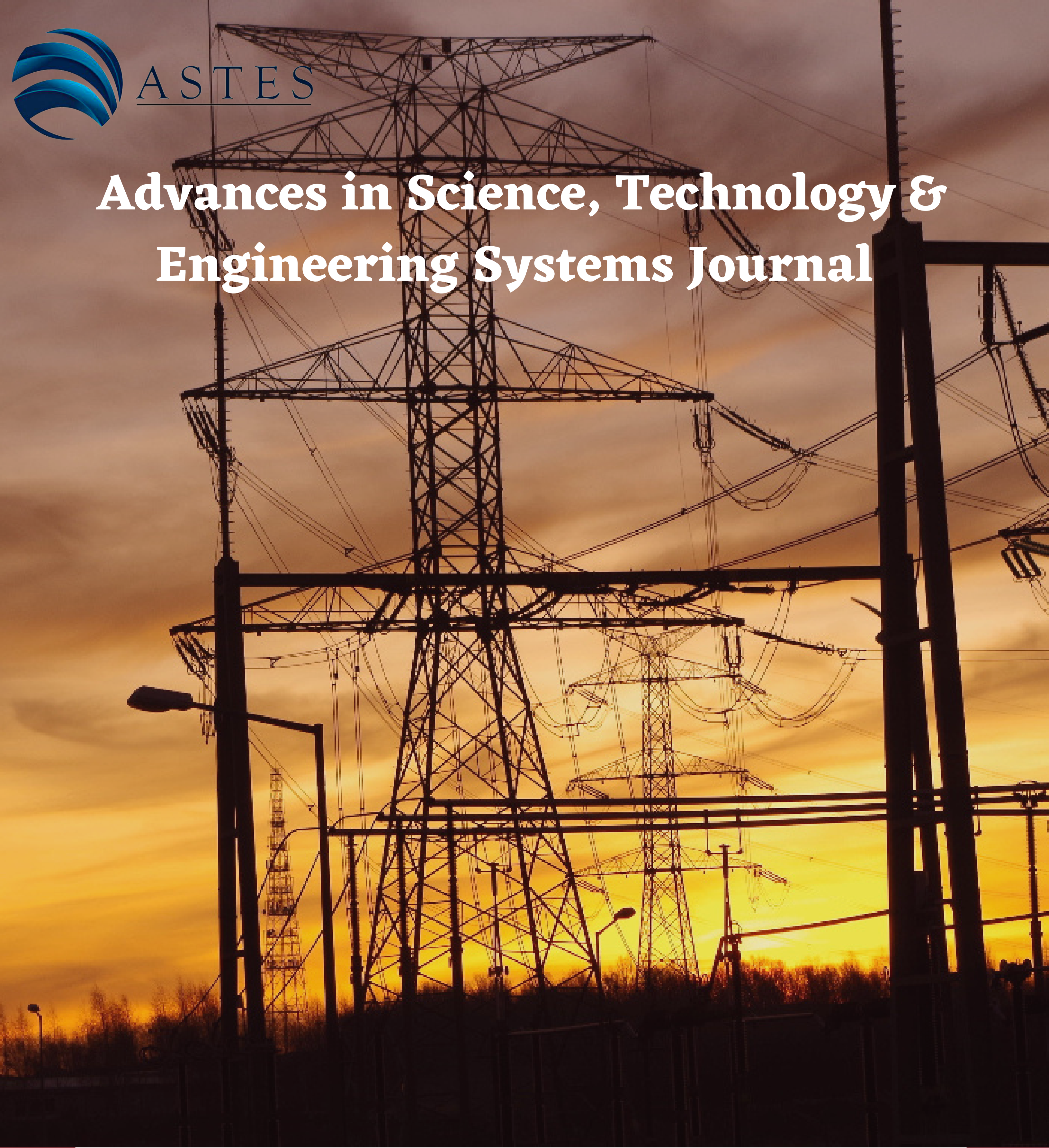

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Growth Models and Age Estimation of Rice using Multitemporal Vegetation Index on Landsat 8 Imagery

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A B S T R A C T

Age and growth are two essential rice biophysics parameters used to determine the health parameters and production rate. The spatial data of both parameters can utilize remote sensing technology, which in turn makes use of several vegetation indices to achieve accurate estimation. However, due to the rapid changes in rice plants' characteristics, it is essential to study vegetation index utilization using a multitemporal method to improve its accuracy. Therefore, this research uses a multitemporal Enhanced Vegetation Index (EVI) to estimate rice's age and growth model. The multitemporal EVI patterns were observed to estimate the Time Early Planting (TEP) and the maximum EVI value of rice in an area. The results showed that the maximum EVI value in the rice fields of Demak Regency has a class range of 0.4 to more than 0.9. The highest value is in the class of 0.80 - 0.85 covering 12023.28 ha, followed by 0.75 - 0.80 at 11834.19 ha. Furthermore, the multitemporal EVI method on Landsat 8 images was used to estimate the rice age with accuracy or RMSE of 7.7 days. The result also showed that this value is good enough because the RMSE is still in the same range of paddy growth phases.

1. Introduction

Rice is the essensial food for about half of the world's population. It is supply 20 % of the calories consumed worldwide [1]. Almost 90 % the global rice is produced in Asia, Africa and America Latin [2]. Most of country in thats region used rice as the staple food, especiaally in Indonesia. According to Saliem [3], close to 100% of the Indonesian population consume this product, thereby making it a staple food, with significant economic importance. The continuous increase in population leads to a rise in rice demand, therefore, an essential management strategy, such as the rice intensification system, to boost production [4].

The intensification and management of rice cultivation are inseparable from high-tech approaches due to its ability to monitor biophysical parameters such as the growth phase closely. Detailed information on the growing phase is needed to evaluate rice development [5],[6]. Furthermore, the biophysical monitoring of these parameters is valuable for the growth model and prediction of rice production [7], [8]. This growth phase model is also closely related to rice's age and used to obtain predictable information related to future harvest time.

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Spatial data is needed to monitor rice growth and age models for proper distribution and analysis using remote sensing technology. Several approaches are used to estimate the rice-growing phase, such as the Vegetation Index value approach, as stated in a research carried out by [9] and [10]. However, this study utilizes the Normalized Difference Vegetation Index (NDVI) to estimate rice growth. NDVI is a method occasionally used to monitor vegetation growth from space [11], [12]. Furthermore, various vegetation index techniques were developed to improve their accuracy and efficiency. Therefore, rice plants with a fast-changing level of green sensitivity utilized various combinations of techniques. The multitemporal data technique is one of the methods that can provide a solution [13]. Generally, indices such as NDVI show the growth status of green vegetation, therefore plant monitoring can be realized using remote sensing with time series or multitemporal data [14].

The utilization of this technique was carried out by [15] to detect rice biological parameters with NDWI and multitemporal EVI on Modis imagery, which is good for growth monitoring because of its daily temporal resolution. However, this method has a low spatial resolution, therefore it is only intended for regional plant growth studies. NDVI also affects soil and atmospheric reflection [16]. This tends to affect rice plants that have background soil types and diverse vegetation densities. [17] carried out a research to modify modified NDVI and ensure the

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Mitigating Congestion in Restructured Power System using FACTS Allocation by Sensitivity Factors and Parameter Optimized by GWO

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In modern deregulated power industry, private sector has invested a lot to supply for extended power demand using the preexisting power system framework. This resulted into increased loading of transmission lines which has to work now to hit their thermal limits. The overloading of transmission line resulted in congestion and hence increase in loss of power in the system. One of the efficient ways to reduce congestion is by enhancing the available transfer capacity (ATC) of the power system. ATC enhancement can be achieved by application of FACTS devices. This paper presents an innovative method to mitigate congestion by locating TCSC in the IEEE 30 bus system. The allocation of TCSC is done by using ACPTDF sensitivity factors while the parameter setting is done by applying Grey Wolf Optimization (GWO) method. The effective application of GWO is demonstrated in this paper to reduce active power loss, enhancement of ATC value with reduction of reactive power loss and to optimize TCSC size through a multi objective function. The suitability of algorithm is established through concerned figures and tables.

1. Introduction

This paper is an extension of work originally presented in 3rd International Conference on Recent Developments in Control, Automation & Power Engineering (RDCAPE) [1].

With deregulation act in 2003, the reliability of the power system is enhanced in terms of availability and economics. The private sector intervened in the power generation and used the preexisting transmission system for distribution through pools. This resulted in overloading of lines to work under congestion, reaching their thermal and voltage limits [2]. The congestion resulted in huge amount of power losses thus effecting the economy of power transmission. There are two ways to relive the congested system. The cost-free method and the non-cost-free method. The cost-free method is one with no enhancement of operational cost. This is effectively achieved by incorporating Facts devices [3]. Power system is unevenly loaded. This results in inefficient output of the circuits. With uneven sharing of load through the lines, some lines become overloaded while others turn out to be under loaded. This distorts the voltage profile of the interconnected system [4]. FACTS being optimized for their respective parameters such as voltage angles, circuit reactance and voltage magnitudes, can be successfully incorporated in power system to modify the line parameters. This results in establishing a preferred bus and generator voltage profiles [5]. The system efficiency in terms of enhance loadability can be improved by suitably designing the controller of FACTS devices [6]. Maximum load on power system is industrial and domestic inductive load. Thus, there is significant voltage drop at these loads resulting in uneven voltage profile of system. Hence to reduce system inductive voltage drop, the inductive reactance has to be reduced in order to increase the power transfer capacity (PTC) of the system. The series FACTS device such as TCSC plays a vital role in achieving the reactance regulation [7]. To utilize the system at its maximum capacity together with power transmission economics, the transfer capacity of system must be enhanced to maximum value. System loadability improvement by increasing ATC value was achieved by an optimal power-flow-based model, for maximum power transfer by incorporating optimized FACTS control in the system [8]. Properly tuning

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Case Study to Determine the Causes of Fire in Agriculture

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ABSTRACT

The aim of this paper is to identify a critical link in the man - machine - environment system in the case of an adverse event, such as a hay baling fire, based on a comprehensive risk assessment method. The rate of spread of fires in agriculture depends on meteorological conditions, with large areas affected and potentially endangering the surrounding buildings, facilities. Access to fires is difficult and can extend to forests. Water is often lacking at the scene of a fire, which should be extinguished, and water sources are usually located over long distances. The paper addressed a specific example using a comprehensive method. The process of risk assessment in the work process was determined by the following steps: assessment of the overall risk of the work equipment, assessment of environmental impact, assessment of the person's ability to manage risk, calculation of the resulting risk value, comparison of calculated risk value and acceptability of risk value, proposal of measures. The result of the analysis was the finding that the primary cause of the fire is the environment, i.e. high ambient temperature. The critical element in hay baling work system is the work environment. The risk ratio was estimated at 5.78. The level of risk was low due to the rapid intervention of the human factor. Based on the results, the technical measures mentioned in the paper were proposed to the operator. The paper found that maintenance of the machine is important for protection against agricultural fires, where the human factor plays an important role in the man - machine - environment system.

1. Introduction

Agriculture is one of the most dangerous sectors in terms of accidents at work. There is an accident rate for employees in agriculture without fatalities 1.7 times higher than the average and accident rate with fatalities is three times higher than the average [1].

Fires pose a risk of destroying the environment and human lives [2]. The causes of fire in agricultural machinery are various. The literature [3] lists several possibilities in which a fire may occur: e.g. in the engine, in the bearings, brakes. Maintenance of these machines is an important fire protection.

Maintenance activities in agriculture are very diverse, including the following activities:

- maintenance and repair of machinery, equipment and vehicles,
- maintenance of farmyards and buildings,
- maintenance of silos, tanks, manure tanks and grain tanks,
- maintenance of electrical installations,
- maintenance of drainage and irrigation systems,
- maintenance of paved and unpaved roads.

The following hazards can be identified during these maintenance activities:

- mechanical hazards when working with maintenance machinery, for example crushing, connecting and high-pressure injection means,
- electrical risks,
- thermal risks,
- chemical risks associated with the use of hazardous substances during maintenance or maintenance of equipment containing hazardous substances,
- risk of explosion or fire or during maintenance,
- biological risks in the maintenance of contaminated equipment,
- ergonomic risks, e.g. incorrect construction of tools,
- work activities in enclosed spaces.

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