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Full Length Article

Antioxidant Activity and Phytochemical Profile in Sequential Solvent Extract of Faloak (*Sterculia quadrifida*) Leaves and Stem Bark

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Abstract

Faloak (*Sterculia quadrifida* R.Br) is an endemic plant of East Nusa Tenggara Island. This plant was found in the East Nusa Tenggara archipelago, including Timor, Sumba, Flores, Alor and Rote Islands. Traditionally, the community used this plant for a variety of therapeutic purposes. Faloak demonstrate numerous biological activities, primarily attributable to its secondary metabolite compounds. The presence of phenolic compounds and flavonoids renders it a good candidate for the development of a novel natural antioxidant resource. Faloak possesses several biological activities related to its high antioxidant content. However, research on antioxidant, phenolic, and flavonoids content of Faloak leaves and stembark in different solvent remains limited. This study aims to investigate the antioxidant activity of Faloak leaves and stembark the ABTS (2, 2'-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid) and DPPH (2, 2-diphenyl-1- (2, 4, 6-trinitrophenyl) hydrazyl) radical scavenging assay in different solvents. Measurement of phenolic and flavonoids levels, together with thin layer chromatography (TLC) bioautography, is performed to predict the related antioxidant compounds. The results showed that ethanol, as a polar solvent, produced the highest output, indicating that Faloak mostly comprises a polar compound. Leaves have a higher concentration of phenolic and flavonoid compounds than stembark. Leaves and stembark have significant antioxidant activity. Thin layer chromatography (TLC) combined with bioautography confirmed the presence of polyphenols and flavonoids, which are likely responsible for the antioxidant activity in the Faloak fractions. Bioautography also yielded active compounds with antioxidant activity. The stembark and leaves of Faloak possess antioxidant properties; nevertheless, the leaves demonstrate significant potential as a candidate for diverse pharmacological treatments due to their robust antioxidant activity and sustainability.

Keywords: ABTS; Antioxidant; DPPH; Faloak; Flavonoids; Phenolics

Introduction

Free radicals have one or more unpaired electrons in the outermost orbital, rendering them extremely reactive (Lobo *et al.* 2010). These free radicals include reactive oxygen species (ROS) and reactive nitrogen species (RNS). ROS and RNS activate signaling pathways to initiate biological processes, whereas oxidative stress and nitrosative stress denote elevated levels of ROS and RNS that inflict damage on DNA, proteins, or lipids

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(Schieber and Chandel 2014). Oxidative stress in the body is a primary contributor to cellular damage and several degenerative diseases, including cancer, cardiovascular diseases, neurodegenerative conditions, inflammation, antiviral and hepatic injury (Phaniendra *et al.* 2015; Nurina *et al.* 2024; Riwu *et al.* 2024). Free radicals can originate from internal or external sources. Endogenous or internal sources are produced by regular metabolism and encompass numerous cell organelles, including mitochondria, fatty acid metabolism, peroxisomes, endoplasmic reticulum, and phagocytic cells. Exogenous sources include tobacco smoke, heavy metals, UV irradiation, air and water pollution, and drugs (Martemucci *et al.* 2022). The prevalence of these events can be reduced by consuming sufficient antioxidants. These substances will impede or prevent the oxidation of other substances, thereby reducing the generation of free radicals (Kasote *et al.* 2015).

An antioxidant is a chemical substance that mitigates the oxidative impact of free radicals by giving an electron to an unpaired free radical. Numerous secondary metabolites found in herbs have demonstrated efficacy as antioxidants and have potential as natural exogenous antioxidants (Sukweenadhi *et al.* 2020). Herbal medicines contain polyphenols, believed to be the primary agents responsible for antioxidants activities. The predominant secondary metabolites in plant are phenolic compounds, which include simple phenols, phenolic acid, coumarins, stilbenes, flavonoids, lignans and tannins (Kumar and Goel 2019). Flavonoids and phenolics are present in several plants and have demonstrated health benefits for humans. These compounds possess antihyperlipidemic, anticancer, cardioprotective, antibacterial and antidiabetic properties (Zeb 2020).

Indonesia has over 7,500 medicinal plants, one of which is Faloak (*Sterculia quadrifida* R.Br). Faloak is a plant that proliferates in East Nusa Tenggara and is extensively used for several medicinal purposes (Nitbani *et al.* 2019). This endemic flora is found in the East Nusa Tenggara islands, including Timor, Sumba, Flores, Alor, and Rote Islands (Siswadi *et al.* 2020). The local names of Faloak include *Faloak* (Kupang), *Komila* (Timor Leste), *Nitaen* (Belu), *Flolo* (North Central Timor), *Kawarid* (Central Sumba), *Penil* (Alor), *Klengis* (East Flores), *Mangiladu* (Gorontalo) (Darojati *et al.* 2022). The community extensively uses several parts of Faloak, including the leaves, stembark, flower and fruits (Fig. 1). Locals have been using Faloak stembark stew empirically to treat numerous diseases, including typhoid fever, hepatitis, malaria, and anticancer (Siswadi *et al.* 2015; Rollando *et al.* 2022). Traditional uses of Faloak are supported by scientific evidence. Water, methanolic and ethanolic extracts of Faloak stembark activity were reported effective against the hepatitis C virus (Sola *et al.* 2018). Ethanolic extracts of Faloak stembark exhibit antiplasmodial activity attributed to their elevated levels of flavonoids, alkaloids and saponins (Tenda *et al.* 2021). The antibacterial, anticancer, antidiabetic, and immunomodulating properties of Faloak extracts have also been reported (Darojati *et al.* 2022). Furthermore, Faloak serves as a natural source of antioxidants to prevent oxidative stress.

Recent scientific studies have demonstrated the antioxidant activity of Faloak, which includes polyphenols as secondary metabolites, including flavonoids, phenolic acids, and tannins, all recognized for their significant antioxidant properties. The Inhibitory Concentration 50 (IC_{50}) of ethanolic extract of Faloak stembark was 14.17 ± 0.55 μg/mL (Dillak *et al.* 2021). Ethyl acetate fraction of the 96% ethanolic extract reportedly had the highest total flavonoids, measuring 4.290 ± 0.029 mg/g, in comparison to the initial ethanolic extract, water fraction, insoluble fraction, and n-hexane fraction (Munawaroh *et al.* 2018). Therefore, it could be categorized as a highly potent antioxidant resource (Saragih and Siswadi 2019). Given the limited availability resources of Faloak stembark, it is essential to investigate other parts of Faloak, with the leaves emerging as a viable option. The leaves have a greater resource availability compared to stembark. Based on the facts provided above, Faloak leaves and stembark showed high potential to be developed as natural antioxidant resources.

Studies on the antioxidant activity, phenolics and flavonoids content of Faloak leaves and stembark in different solvents are still limited. In the prior work, extraction was conducted solely using a single solvent, whereas in this study, we used a different method of extraction by sequential solvent extraction with a gradient solvent (n-hexane, ethyl acetate, and ethanol). Sequential solvent extraction is a popular method for extracting active components from natural sources. This extraction method can separate the secondary metabolite of Faloak based on its polarity by using different solvents with varying polarities (Uthayarasa *et al.* 2010). The objective of this study was to investigate the characteristics of secondary metabolites that have an antioxidant activity in Faloak leaves and stembark, depending on their polarity.

Materials and Methods

Research materials

This study used the stembark and leaves of Faloak. The determination was performed at the Plant Taxonomy Laboratory, Department of Biology, Universitas Padjadjaran, under the code 53/HB/03/2022. Gallic acid, quercetin, ABTS (2,2'-azino-bis-[3-etilbenzotiazolin sulfonic acid) and DPPH (2,2-diphenyl-1- (2,4,6-trinitrophenyl) hydrazyl) were purchased from Sigma Aldrich, Germany, silica gel $G_{60}F_{254}$ TLC plates, $FeCl_3$ 1%, 2-aminoethyl diphenylborinate (NP), PEG 5% and NaOH from Merck, Germany.

Preparation of faloak simplicia

Samples of the stembark and leaves of Faloak were collected from Timor Island, East Nusa Tenggara, Indonesia (latitude -9 13' 60.00" S, longitude 124 55' 59.99" E). The plant was collected in July 2024, with a minimum tree diameter of 30 cm. Fresh leaves and stembark were further processed into dry simplicia powder (Fig. 2).

Preparation of faloak extraction

Extraction was generated by sequential extraction with various solvents according to their polarity. Kinetic maceration at 200 rpm was used in the sequential extraction method of 3 x 1 h for each solvent at room temperature to prevent the loss of active compounds. This study used n-hexane, ethyl acetate, and 80% ethanol as solvents. One hundred grams of simplicia were extracted using 1 L of solvent. The liquid extract was evaporated using a rotary evaporator and water bath to obtain a thick fraction (Sridhar *et al.* 2021).

The yield of each fraction was calculated using the formula presented below:

$$\% \text{ yield} = \frac{\text{weight of thic fraction (g)}}{\text{weight of crude drug powder (g)}} \text{ x } 100\%$$

Total phenolic determination

The total phenolic content assay was conducted using the Folin-Ciocalteu method, in accordance with the Indonesian Herbal Pharmacopoeia (IHP 2017). Gallic acid was used as a standard solution at various concentrations of 30, 40, 50, 70 and 100 ppm. A 1 mL sample or standard was added with 5 mL of 7.5% Folin-Ciocalteu and 4 mL of 1% NaOH solution in a 10 mL volumetric flask. The solution was allowed to stand for one h at room temperature. The absorbance of the standard solution was measured using a UV-Vis spectrophotometer at 765 nm. The total phenolic content in each fraction was calculated as gallic acid equivalent (%GAE). Each sample evaluation was performed in triplicate (IHP 2017).

Total flavonoids determination

The total phenolic content assay was carried out in accordance with the Indonesian Herbal Pharmacopoeia (IHP 2017). Quercetin was used as a standard solution at various concentrations of 25, 50, 75, 90 and 100 ppm. 0.5 mL sample or standard was added with 0.1 mL of 10% $ALCL_3$, 0.1 mL of Na_2CO_3 1 *M*, 1.5 mL ethanol and distilled water up to 10 mL in a volumetric flask. Solutions were allowed to stand for 30 min at room temperature. The absorbance of each standard solution was measured using a UV-Vis spectrophotometer at 415 nm. The total phenolic content in each fraction calculated as quercetin equivalent (%QE). Each sample evaluation was performed in triplicate (IHP 2017).

Antioxidant activity assay with ABTS method

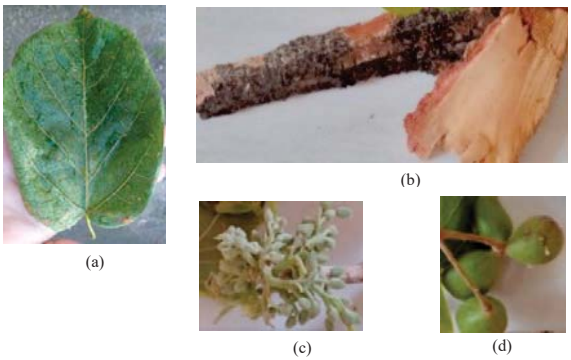

Fig. 1: Morphological characteristics of Faloak. (**a**) Leaves (**b**) Stembark (**c**) Flower (**d**) Fruit

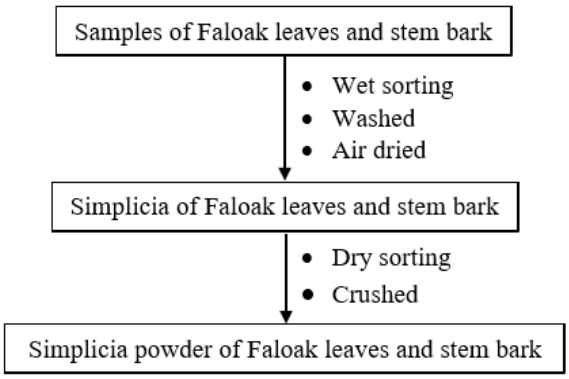

Fig. 2: Preparation of simplicia powder (Tenda *et al.* 2021)

The ABTS antioxidant assay was carried out according to Setiawan *et al.* (2018). ABTS solutions, 7.1 mg ABTS and 3.5 mg potassium persulfate, were dissolved separately in demineralized water. The solutions were mixed and incubated for 12 h in the dark room to form ABTS radicals, which gave a blue-green color. Sample solutions were prepared at different concentration. ABTS solution and samples (1:10 ratio) with varying concentration were pipetted into a 96-well transparent polystyrene microplate, homogenized, and incubated for five min in the dark room. The mixtures were measured at 734 nm with a microplate reader. Each sample evaluation was performed in quadruplicate (Setiawan *et al.* 2018). The free radical scavenging activity was assessed using the following formula:

$$\text{ABTS inhibition activity } (\%) = \left[\frac{(A1 - A0) - (S1 - S0)}{(A1 - A0)}\right] \times 100$$

Where, A1 = absorbance of DPPH solution, A0 = absorbance of blank (ethanol) solution, S1 = absorbance of sample solution and S0 = absorbance of sample blank solution.

Antioxidant activity assay with DPPH method

The DPPH radical scavenging assay was carried out according to Sukweenadhi *et al.* (2020). Sample solutions were prepared at several concentrations. A 400 ppm DPPH solution and samples (1:3 ratio) with varying concentrations were pipetted into a 96-well transparent polystyrene microplate, homogenized, and incubated for 30 min in the dark room. The mixtures were measured at 517 nm with a microplate reader. Each sample evaluation was performed in quadruplicate (Setiawan *et al.* 2018). The free radical scavenging activity was assessed using the following formula:

$$\text{DPPH inhibition activity (\%)} = \left[\frac{(A1 - A0) - (S1 - S0)}{(A1 - A0)}\right] \times 100$$

Where, A1 = absorbance of DPPH solution, A0 = absorbance of blank (ethanol) solution, S1 = absorbance of sample solution and S0 = absorbance of sample blank solution.

TLC-Bioautography of faloak fractions

The TLC-bioautography method was carried out according to Rismawati *et al.* (2018). Faloak leaves and stembark fractions were dissolved in methanol at a solute-to-solvent ratio of 1:10. The sample solutions were spotted on the silica gel TLC plates and subsequently eluted using the selected mobile phases. The plates were later examined under UV254 and 365 nm (Rismawati *et al.* 2018). The plates were further sprayed with derivatizing reagents, including $FeCl_3$, NP/PEG and ABTS, to detect phenolic, flavonoids and antioxidant properties (Fig. 3).

Statistical analysis

All analyses were performed in triplicate for phenol and flavonoid analysis, and in quadruplicate for the antioxidant assay. The data are shown as mean ± standard deviation for the replication. Linear regression was applied to determine Inhibitory Concentration 50 (IC_{50}) of the sample.

Results

The 80% ethanolic extract had the maximum yield in both leaves (12.27%) and stembark (8.13%). This result indicated that the predominant metabolite of Faloak leaves and stembark were extracted using a polar solvent. Semipolar metabolites were distributed in ethyl acetate extract and non-polar metabolite in n-hexane extract.

Gallic acid and quercetin are phenolic and flavonoids compounds that are typically used as standards for determining total phenolic and flavonoids content. Chemical reactions between Folin-Ciocalteau and phenolic compounds provide a blue molybdenum-tungsten complex, allowing for absorbance measurement through visible spectrophotometry. The addition of 7.5% Na_2CO_3 as a weak base is intended to create an alkaline environment. The reaction occurs solely in alkaline settings as complex

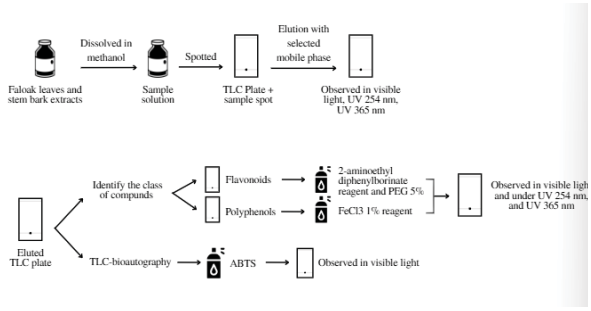

Fig. 3: TLC-bioautography scheme of faloak (This scheme is made by author)

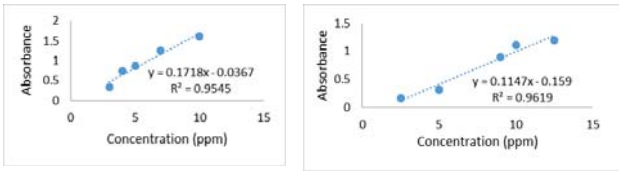

Fig. 4: Standard curve for (**a**) gallic acid (phenolic) and (**b**) quercetin (flavonoid)

formation requires the proton dissociation of phenolic compounds. Increased concentrations of phenolic compounds will result in a darker blue in the solution (Hasnaeni *et al.* 2019). Total phenolic content of the Faloak fraction was calculated using the calibration curve of gallic acid ($y = 0.1718x - 0.0367$, $R^2 = 0.9545$), seen in Fig. 4, while the total flavonoid content was calculated using the calibration curve of quercetin ($y = 0.1147x - 0.159$, $R^2 = 0.9619$).

The ethanolic extract of Faloak stembark and leaves had the highest phenolic content, measured as % GAE, followed by the ethyl acetate. In this study, the ethanolic extract of Faloak leaves and stembark exhibited a higher phenolic content compared to the ethyl acetate extract. The measurement of flavonoid content indicated that the ethanolic fraction of leaves possessed the highest flavonoid level, followed by the ethyl acetate fraction of leaves, the ethyl acetate fraction of stembark and the ethanolic fraction of stembark. These results indicated that the phenolic and flavonoids contents may serve as the active antioxidants in Faloak leaves and stembark.

The antioxidant activity of n-hexane, ethyl acetate, and 80% ethanolic fractions of Faloak leaves and stembark was initially tested qualitatively as a preliminary test. The n-hexane fractions of leaves and stembark showed negative antioxidant activities, as evidenced by the absence of any noticeable color change in the solutions; therefore, they were eliminated from further testing. Conversely, the ethyl acetate and the 80% ethanolic fraction of Faloak leaves and stembark showed positive results, as evidenced by the disappearance of bluish-green color in the ABTS assay and the transition from yellow to colorless in the DPPH assay. The antioxidant activity of each fraction was subsequently evaluated using a microplate reader. The result

was reported as IC_{50} values, indicating the concentration of the extracts required to neutralize 50% of ABTS and DPPH radicals. A lower IC_{50} indicates a higher antioxidant activity of the sample. The findings indicated that the ethyl acetate fraction of Faloak stembark (IC_{50} 48.49) exhibited robust antioxidant activity, followed by the ethanolic fraction of Faloak leaves (IC_{50} 91.82) and stembark (IC_{50} 67.19) with significant antioxidant activities. The ethyl acetate fraction of Faloak leaves (IC_{50} 233.88), on the other hand, displayed the lowest antioxidant activity (Table 3). The DPPH antioxidant assay (Table 4) showed that the 80% ethanolic fraction of Faloak leaves (IC_{50} 58.06) and stembark had a higher activity than the ethyl acetate extract (IC_{50} 21.18). The ethyl acetate leaves extract showed the lowest antioxidant activity and this result is similar to the ABTS assay. The stembark had a higher antioxidant activity in both the ABTS and DPPH methods compared to the leaves.

The leaves and stembark extract were individually applied to analytical TLC plates and eluted using selected mobile phases. Upon elution, the plates were sprayed with specific spot-visualizing reagents: 1% $FeCl_3$ for the detection of polyphenols, NP/PEG for flavonoids, and ABTS for bioautography to identify the presence of antioxidant compounds.

A positive result for polyphenols was indicated by a dark green or bluish-black color in visible light, while a positive result for flavonoids was indicated by a light blue, green, yellow, orange fluorescence or an increase in intensity under UV 365 nm. A positive result of antioxidants was indicated by a pale blue to white-colored spot on a turquoise background in visible light (Spangenberg *et al.* 2011; Nile and Park 2015). The results were summarized in Table 5. Based on results (Fig. 5), the area exhibiting positive antioxidant activity also yielded favorable results to $FeCl_3$ and NP/PEG. Thus, the active compounds in the ethyl acetate and 80% ethanolic fraction of Faloak leaves and stembark, showing white color spot in ABTS and giving a positive color of spot to $FeCl_3$ and NP/PEG, were likely polyphenols and flavonoids.

Discussion

The extraction yields of Faloak leaves and stembark (Table 1). Extraction yield is a parameter that determines the quality of an extract, representing the ratio of the weight of the resulting fractions to the original weight of simplicia (Monagas *et al.* 2022). A higher yield value indicates the production of more fractions, signifying a better fractionation process (Dhanani *et al.* 2013). The principle "like dissolves like" was applied in selecting solvents (Rasul 2018). In the sequential solvent-extraction procedures, n-hexane, ethyl acetate, and 80% ethanol served as a nonpolar, semipolar and polar solvent, respectively. Among the three solvents, 80% ethanol produced the highest yield of fraction in both leaves and stembark. This demonstrated that the predominant secondary metabolites found in Faloak leaves and stembark are polar compounds. This result indicates that ethanolic 80% is the best solvent to get the optimum extract (Uthayarasa *et al.* 2010). This research used kinetic maceration as an extraction method. Kinetic maceration is a conventional extraction that uses kinetics to improve extraction efficacy. It is simple, recognized as an energy-saving procedure, suitable for thermolabile compounds, cost-effective and scalable (Rasul 2018; Gori *et al.* 2021).

Quantification of phenolic and flavonoids was determined to both extract of leaves and stembark. The ethanolic extract in both leaves and stembark showed the highest level, especially in phenolic level. Phenolic compounds have hydrophilic properties and demonstrate substantial solubility in polar solvents, indicating that the highest phenolic level was founded in ethanolic extract (Rodrigues *et al.* 2022). In other studies, leaves contain a higher concentration of polyphenol compounds than other parts and these compounds are typically found in polar solvents. Phenolics and flavonoids are secondary

Table 1: The yield of faloak extracts using various solvents

Plant Parts	Solvent	Yield (%)
Leaves	n-Hexane	1.70 ± 0.05
	Ethyl acetate	1.60 ± 0.30
	80% ethanol	12.27 ± 0.54
Stembark	n-Hexane	0.35 ± 0.02
	Ethyl acetate	0.59 ± 0.08
	80% ethanol	8.13 ± 0.58

Note: Data are presented as mean ± standard deviation (n = 3)

Table 2: Total phenolic and flavonoids content of faloak extracts

Plant Parts	Solvent	Total phenolic content (% GAE)	Total flavonoids content (% QE)
Leaves	Ethyl acetate	2.54 ± 0.01	2.05 ± 0.08
	80% ethanol	3.85 ± 0.02	2.23 ± 0.05
Stembark	Ethyl acetate	2.69 ± 0.03	1.64 ± 0.07
	80% ethanol	4.50 ± 0.01	1.23 ± 0.05

Note: Data are presented as mean ± standard deviation (n = 3); GAE: Gallic Acid Equivalent; QE: Quercetin Equivalent

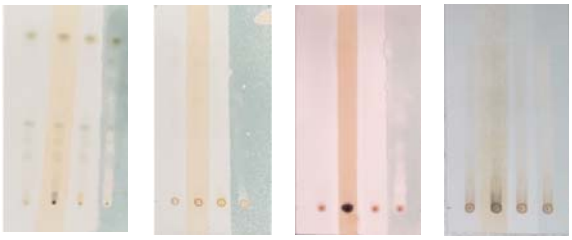

Fig. 5: TLC-Bioautography results for leaves and stembark of faloak

Note: TLC System (SP: stationary phase; MP: mobile phase); Left to right are visible, $FeCl_3$ 1%, NP/PEG, ABTS

(a) Ethyl acetate fraction of faloak leaves. SP: silica gel GF 254; MP: chloroform : ethyl acetate : methanol (5:5:1)

(b) Ethanolic fraction of faloak leaves. SP: silica gel GF 254; MP: chloroform ethyl : acetate : formic acid (3:3:0.5)

(c) Ethyl acetate fraction of faloak stembark. SP: silica gel GF 254; MP: chloroform : methanol (9:1)

(d) Ethanolic fraction of faloak stembark. SP: Silica gel GF 254; MP: 2-propanol : chloroform : glacial acetic acid (5:1:0.5)

metabolites found in the plant. Phenolic compounds are bioactive secondary metabolites that have a significant role in a wide range of therapeutic effects (Mamari 2021). The term "phenol" refers to a phenyl ring containing one or more hydroxyl substituents. Phenolic is a natural compound that has a benzene ring with one or more hydroxyl groups, along with functional derivates, such as esters, methyl esters and glycoside (Tsao 2010). Polyphenol is a natural compound characterized by the presence of at least two phenyl rings, each containing one or more hydroxyl substituents (Lattanzio 2013). It includes a diverse category of bioactive phytochemicals, encompassing flavonoids, stilbenes, phenolic acid and lignans (Fraga *et al.* 2019). They are natural compounds synthesized in numerous plants that possess high antioxidant capacity (Dias *et al.* 2021). The compounds are also linked to several therapeutic effects, such as obesity, diabetes, cardiovascular disease, hyperlipidemia, cytotoxicity and neurodegenerative diseases in humans (Fraga *et al.* 2019; Rana *et al.* 2022).

The ethanolic extract of leaves contained slightly higher flavonoids level compared to ethyl acetate extract. The previous study showed the identical result that the polar solvent can enhance the amount of Phenolic and flavonoids in Faloak extraction (Purwantiningsih *et al*. 2024). Flavonoid compounds have high solubility in polar and semipolar solvents, *e.g*., ethanol, methanol, ethyl acetate, n-butanol and water (Hikmawanti *et al.* 2021).

Flavonoids and their conjugates constitute a broad category of natural chemicals, with over 8,000 distinct flavonoids identified. Each part of a plant might have varying types and levels of flavonoids. Flavonoids constitute a primary category of polyphenols characterized by a pair of aromatic rings interconnected by a three-carbon chain inside a heterocyclic structure. The chemical structure of flavonoid compounds is based on C6C3C6 skeleton (Lattanzio 2013). The major classes include flavones, isoflavones, flavonols, anthocyanidins, flavanones, flavanols, chalcones and aurones. Flavonoids may either bind or not bind with sugar moieties (Chaves *et al.* 2020). Therefore, measuring phenolic and flavonoid levels is crucial for predicting the antioxidant potential of the fraction. Additionally, the level of phenolic and flavonoids vary across various plant parts (Table 2).

Numerous studies indicated the free radical scavenging action of phenolic and flavonoids. The maximum scavenging activity seemingly necessitated the presence of the 3-OH group linked to the 2.3-double bond and adjacent to the 4-carbonyl in ring C. The other mechanism involves the orthodiphenolic structure in B ring, as the monophenolic ring is ineffective as a hydrogen donor (Rice-Evans *et al.* 1996). In in-vivo studies, phenolic and flavonoids have significant antioxidant activity. Numerous compounds, including flavonols, flavones, hydroxycinnamic acids, hydroxybenzoic acids, coumestans, anthocyanins and diferuloylmethanes, have demonstrated antioxidant activity in animal models. Recent study reveals that phenolic compounds help protect the body against many health ailments (Martins *et al.* 2016). The result showed that stembark had a higher phenolic content than the leaves. Both the leaves and stembark also contained flavonoids compounds, with a higher concentration in the leaves. Martati *et al.* (2023) and Dean (2024) identified phenolic compounds in stembark of Faloak, *e.g*., vanillin, apocynin, methyl cinnamate, scopoletin, L-pipevolinic acid, arecoline, δ-valerolactam, 3.4 dihydroxybenzaldehyde, 4-hydroxybenzaldehyde, epicathechin, rutin and various fatty acid (Martati *et al*. 2023; Dean 2024).

Table 3: Antioxidant activity of faloak fractions by the ABTS assay method

Plant parts	Solvent	Concentration (ppm)	Inhibition (%)	IC_{50} (ppm)
Leaves	Ethyl acetate	50	15.53 ± 1.96	233.88
		100	19.64 ± 0.93	
		200	52.02 ± 0.47	
		400	78.19 ± 2.02	
	80% ethanol	25	19.21 ± 1.99	91.82
		50	40.87 ± 0.95	
		100	50.46 ± 2.15	
		150	72.93 ± 0.92	
Stembark	Ethyl acetate	10	12.84 ± 0.88	48.49
		25	34.58 ± 1.66	
		50	54.13 ± 0.49	
		100	90.96 ± 0.57	
	80% ethanol	10	14.21 ± 0.69	67.19
		27.5	20.97 ± 1.30	
		55	56.69 ± 1.33	
		100	80.09 ± 2.51	

Note: Data are presented as mean ± standard deviation (n = 4); IC_{50} is the concentration required to inhibit 50% of free radicals

Table 4: Antioxidant activity of faloak fractions by the DPPH assay method

Plant parts	Solvent	Concentration (ppm)	Inhibition (%)	IC_{50} (ppm)
Leaves	Ethyl acetate	200	34.75 ± 0.30	387.44
		400	49.07 ± 0.93	
		600	68.15 ± 0.65	
		800	88.93 ± 0.43	
	80% ethanol	25	26.74 ± 0.71	58.06
		50	46.74 ± 1.53	
		100	83.37 ± 2.40	
		150	94.17 ± 0.23	
Stembark	Ethyl acetate	10	8.06 ± 0.24	26.37
		20	41.86 ± 0.31	
		30	58.26 ± 0.62	
		40	79.42 ± 0.62	
	80% ethanol	10	19.74 ± 1.89	21.18
		20	51.22 ± 0.91	
		30	73.01 ± 0.68	
		40	92.84 ± 0.18	

Note: Data are presented as mean ± standard deviation (n = 4); IC_{50} is the concentration required to inhibit 50% of free radicals

Table 5: TLC screening and bioautography of faloak fractions

Plant Parts	Solvent	Results		
		Polyphenol	Flavonoids	Antioxidant
Leaves	Ethyl acetate	+	+	+
	80% ethanol	+	+	+
Stembark	Ethyl acetate	+	+	+
	80% ethanol	+	+	+

Note: (+) positive

Content of catechins in the *S. quadrifida* stembark infusion was prepared at a concentration of 7.786% w/w using the HPLC method. Catechin is a polyphenol compound comprised of two aromatic rings and several hydroxyl groups. The presence of o-hydroxyl in the B ring and hydroxyl group in the A and C rings play a crucial role in its antioxidant activity (Riwu *et al.* 2023). Scopoletin, often referred to as 6-methoxy-7 hydroxycoumarin, is a coumarin group distributed in many plants (Cakir *et al.* 2022). Scopoletin possesses a scavenging function that mitigates damage caused by superoxide anions (Shaw *et al.* 2003). Its antioxidant mechanism is associated with ROS scavenging activity through hydrogen atom transfer (HAT) (Antika *et al.* 2022).

According to several previous studies, ABTS and DPPH (are among the three most prevalent assay for antioxidant evaluation, alongside FRAP (ferric-reducing antioxidant power (Ilyasov *et al.* 2020). The quantitative assessment of antioxidant activity was determined using the ABTS and DPPH assay methods to estimate the IC_{50} value. The IC_{50} values represent the concentration of extracts required to eliminate 50% of radicals (Olszowy-Tomczyk *et al.* 2021). ABTS radical cation can be produced and absorb at 734 nm in water (Dorsey *et al.* 2017). The addition of an antioxidant to the ABTS solution resulted in a reduction in absorption due to the termination of the ABTS radical cation (Liang and Kitts 2014). The ABTS assay results showed that the ethanolic and ethyl acetate fractions of the stembark had strong antioxidants in both methods, but the ethyl acetate fraction of the leaves showed much less antioxidant activity compared to others.

DPPH is considered as a widely used method to measure antioxidant activity due to its accuracy, ease of use, and cost-effectiveness. This calorimetric method can assess antioxidant activity using the stable synthetic radical DPPH. As an antioxidant compound reacts with DPPH (purple), its color changes from violet to yellow. DPPH contains an unpaired electron originating from the nitrogen atom. As a hydrogen-donating compound reacts with DPPH, it converts DPPH (purple) into DPPH-H (yellow) (Hawash *et al.* 2022). The result showed that ethanolic and ethyl acetate fractions of Faloak stembark had an exceptionally strong antioxidant activity, followed by the ethanolic fraction of Faloak leaves, which demonstrated strong antioxidant activities. In contrast, the ethyl acetate fraction of Faloak leaves displayed a very weak antioxidant activity (Table 4), Consistent outcomes were observed in both the ABTS and DPPH assays, conforming that the ethanolic and ethyl acetate fractions of stembark exhibited very strong antioxidants in both methods, while the ethyl acetate fraction of leaves exhibited markedly weaker antioxidant activity compared to others. In a previous study, Faloak stembark infusion generated moderate antioxidant activity with an IC_{50} value 51.5 μg/mL (Riwu *et al.* 2023). The research findings indicated that sequential solvent extraction could enhance the antioxidant efficacy of Faloak. Sequential solvent extraction is the process of separating secondary metabolites of plants according to their solubility in a solvent (Abubakar and Haque 2020). This method increases the selectivity of targeted compounds, improves the extraction yield and reduces waste. The antioxidant activity increased due to the elevated concentration of active compounds in the fractional extract. The concentration of antioxidant active compounds can increase the efficacy of natural antioxidants.

Thin layer chromatography is a method that offers insights into profiling, fingerprinting, and both qualitative and quantitative assessment of phytoconstituents (Gaurav *et al.* 2023). Bio-autography has advanced swiftly in the discovery of novel antioxidant substances from plants. This approach offers rapidity, cost-effectiveness, and enhanced bioassay-directed fractionation of bioactive chemicals (Suleimana *et al.* 2009). TLC bio-autography has been extensively used to assess antibacterial, antifungal, anticancer, antioxidant, and other enzymatic activities. There are three types of TLC bio-autography: agar diffusion, direct bio-autography and agar overlay bio-autography (Wang *et al.* 2021). This research used direct bio-autography by spraying the radical solution to TLC plate. The result can be directly obtained by the color changes of the TLC spot. The antioxidant bio-autography assay using the ABTS method revealed that the white spot indicates positive antioxidant activity (Huang *et al.* 2017). The results indicated that compounds exhibiting antioxidant activity are phenolic and flavonoid compounds.

Conclusion

The 80% ethanolic extract of Faloak stembark had significantly superior antioxidant activity compared to others. The stembark exhibited a higher amount of polyphenols than the leaves, although the leaves contained a greater quantity of flavonoids compounds. The ethanolic extract of Faloak leaves also showed high antioxidant activity and have potential as a new candidate for various pharmacological treatments due to their robust antioxidant activity and commendable sustainability.

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Author Contributions

FS, KK, RB, ATP, KA prepared and planned the experimental design. FS, SV, JR, SBL, PVD, LO and SAF carried out the experiment. FS, KK and ATP conducted the statistical data analysis. FS, KK, ATP and KA wrote the article.

Conflicts of Interest

No conflict of interest.

Data Availability

Data may be solicited from the corresponding author for justifiable scientific purposes.

Ethics Approval

In this research we didn't use the animal, cell or human, so we didn't need ethical approval for this research.

Funding Source

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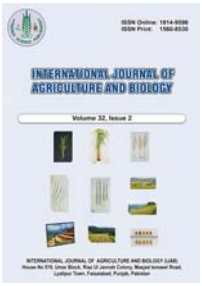

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Badoua Badiel, Tchoa Koné, Razacswendé Fanta Ouédraogo and Mongomaké Koné

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Agus Mulyadi Purnawanto and Anwar Ma'ruf

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Jamilah, Sunadi, Prima Novia, Nita Yessirita, M Zulman Harja Utama, Widodo Haryoko and Siska Resti3

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Retno Rosariastuti, Videlia Putri Pratama, Supriyadi and Sri Hartati

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Albertus Fajar Irawan, Bagus Herwibawa and Dian Safitri

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Widya Aryani, Supriyadi and Widyatmani Sih Dewi

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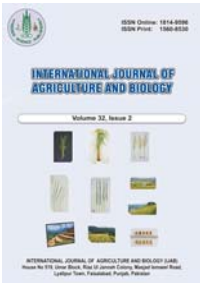

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Abdel Kader Ahmed Zaki and Saleh M. Albarrak

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Charli Russell, Lilla Irwin, Oshini Herath, Ella van Wensveen, Alison Beavis and Anna Pick Kiong Ling*

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Desy Muliana Wenas, Berna Elya, Sutriyo and Heri Setiawan

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Bi Irié Honoré Ta, Claude Bernard Aké, Koffi Stephane Doh and Koffi N'Guessan

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Imram Khan, Dr. Fakhra Soomro, Shahar Bano and Nasir Hussain Hajano

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2265

Abstract: The genus Aiolopus has prevailing position among the band winged grasshopper family Acrididae, exhibits definite food preference and some degree of selectivity to certain categories of plants. This se... »

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Ethno-Veterinary Practices In District Upper Dir Khyber Pakhtunkhwa, Pakistan

Abdus Salam, Iftikhar Ahmad and Muhammad Younas

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2266

Abstract: Ethno-veterinary practices (EVPs) are traditional wisdom, practices and skills rooted in cultural beliefs to heal and uphold animal health. Our study focused on investigating and documenting EVPs appl... »

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The Characteristics of Glucomannan from Mangrove (Bruguiera gymnorhiza) with Different Temperature

Jeki Mediantari Wahyu Wibawanti, Zulfanita, Wharyanti Ika Purwaningsih, Liza Md. Salleh, Rizky Muliani Dwi Ujianti, Faruq Iskandar and Dyah Laksito Rukmi

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2267

Abstract: Mangrove (Bruguiera gymnorhiza (L.) Lam. ex Savigny) a species of mangrove is a potential source of glucomannan. The extraction and utilization of mangrove Bruguiera could contribute to the supply of ... »

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Exploration of the Relationships between Production Performance and Heat Stress Response by Ruminant Animals due to Feed Additives

Ali Mujtaba Shah, Rahmathulla Mohamed Nikzaad, Chuanshi Zhang, Umar Aziz, Nakash Goswami, Qianlan Zhou, Hang He, Akeem Sikiru and Jun Pan

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2268

Abstract: Heat stress poses a significant challenge to ruminant livestock production because it affects feed intake, milk yield, reproductive performance, and overall health. This review explores the relationsh... »

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Antibacterial Effects of Extraction and Fractionation of Andrographis paniculata and Curcuma domestica and Their Combination on the Growth of Salmonella typhi

Agus Rahmadi, Berna Elya and Herman Suryadi

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2269

Abstract: Typhoid fever is a health issue in several developing countries, including Indonesia. The primary standard treatment involves antibiotics, but improper and indiscriminate use of antibiotics leads to b... »

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Agrobacterium rhizogenes-Mediated CRISPR/Cas9 Base Editing of CaSal1 Gene Enhances Drought Tolerance in Chickpea

Naglaa Abdallah, KaramAllah Sabouni , Aladdin Hamwieh , Abdelhadi A. Abdelhadi, Nahed Alsekhni, Suman Veeramasu , Nagwa I. Elarabi and Channapatna Prakash

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2270

Abstract: Drought stress poses a significant challenge to agriculture in the context of climate change, as it restricts chickpea yield and leads to financial losses. Chickpea (Cicer arietinum L.) is the second ... »

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Current Trends in the Production, Purification and Potential Applications of Microbial Lipases

Huma Ijaz, Sikander Ali, Areeba Amir, Amna Waseem and Syeda Wajiha Khalid

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2271

Abstract: Microbial lipases enzymes are the most widely used class of enzyme that has broad functions in industries such as textiles industry, detergent, food industry, medical and diagnosis field, cosmetics, b... »

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Ichthyofauna of the Middle Tocantins River, Imperatriz, Maranhão, Brazil

Miziane de Carvalho Pereira, Rosália Furtado Cutrim Souza, Letícia Almeida Barbosa, Diego Carvalho Viana, Divino Bruno da Cunha and Cleonilde Queiroz

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2272

Abstract: Fish represent more than half of the vertebrate species in the world. In the Tocantins River, the second largest river by water flow in Brazil, there are a minimum of 520 species of fish. This work ai... »

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Climatic and Territorial Vulnerability in the Spatio-Temporal Occurrence of Citrus Black Spot in the Eastern Amazon

Vandeilson Belfort Moura, Raimundo José Moraes Júnior, Lucionila Pimentel Pantoja, Eliana Claudia Oliveira Viana, Anderson Rocha Pinheiro, Núbia Vasconcelos dos Santos, Leonardo Magno Marques de Moraes, Maria Alice Thomaz Lisboa, Raimundo Alessandro da Silva Cunha, Deborah Luciany Pires Costa, Joyse Tatiane Souza dos Santos, Luiz Antonio Soares Cardoso, Gabriel Siqueira Tavares Fernandes and Paulo Jorge de Oliveira Ponte de Souza

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2273

Abstract: Citrus black spot caused by Phyllosticta citricarpa Van der Aa is a quarantine pest that causes premature fruit drop, restricts exports, and results in significant losses in Brazilian citrus farming p... »

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Genetic Diversity of Tomato Yellow Leaf Curl Virus Isolates and its associated Beta-satellite in Tomato Fields in Egypt

Reham G. El-Rahmany , Abdelhadi A. Abdelhadi, Ahmed K. El-Attar, Wael S. El-Araby and Naglaa A. Abdallah

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2274

Abstract: Tomato yellow leaf curl virus (TYLCV) poses a significant threat to tomato production in Egypt. This study investigated the genetic diversity and biological characteristics of TYLCV isolates circulati... »

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Potential Utilization of Coconut Water as a Natural Substitute to Plant Growth Regulators for In Vitro Propagation of Hibiscus sabdariffa

Oluwakemi Adetutu Bello, Adepeju Deborah Adedeji and Olawole Odun Obembe

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2275

Abstract: Hibiscus sabdariffa L. possesses various parts like seeds, leaves and calyces that hold economic importance due to their multi-purpose. Its benefits can be fully tapped into using in vitro propagation... »

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Effect of NPK Fertilization on the Development of Young Tachigali vulgaris Plantations

Lenilson Ferreira Palheta, Wander Luiz da Silva Ataíde, Manoel Tavares de Paula, Raphael Lobato Prado Neves, Madson Alan Rocha de Sousa, Luiz Fernandes Silva Dionisio, José Francisco Berrêdo Reis da Silva, Carlos Alberto Dias Pinto and Pedro Henrique Oliveira Simões

IJAB 2025, Volume 33(Issue 02); https://doi.org/10.17957/IJAB/15.2276

Abstract: The aim of the study was to evaluate the effect of nitrogen, phosphorus and potassium fertilization on the initial development of Tachigali vulgaris plantations for the production of forest biomass. T... »

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Effect of Adding Coconut Oil to Feed on the Growth of Climbing Perch (Anabas testudineus)

Yulisman, Retno Cahya Mukti and Puteri Ramadhani

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2277

Abstract: Natural fishing activities cannot continue to meet market demands. Aquaculture has made a significant contribution to reducing fishing. Nevertheless, fish culture must meet their nutritional needs to ... »

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Pomological, Nutritional and Biochemical Characteristics of Native Dates (Phoenix dactylifera) cv. Mejhoul Sampled at Different Climatic Areas in Morocco

Abdelfattah Goubi, Dounia Amghar, Eimad dine T. Bouhlali, Wafaa Bouzir, Hicham Elidrissy, Abdellah Zinedine, Lahsen El Ghadraoui and Raja Guemmouh

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2278

Abstract: This study aimed at studying the pomological, nutritional, and biochemical characteristics of Mejhoul dates collected at four different areas in Morocco. Analytical results showed that the maximum len... »

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Garlic Production in Indonesian Tropical Lowland using Root Zone Cooling and Aeroponic System

Eni Sumarni, Okti Herliana, Priswanto, Noor Farid and Zulfa Ulinnuha

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2279

Abstract: Garlic (Allium sativum L.) is widely used in Indonesian cuisine for its medicinal benefits due to its antibiotic properties. Despite this, Indonesia continues to rely on imports to meet its garlic dem... »

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Assessing the Role of Compost Tea and Potassium-based Inorganic Salts in Managing Anthracnose in Chili Plants

Nurul Faziha Ibrahim, Muhammad Amali Aizat Muhammad Harisi, Suhaizan Lob, Norhidayah Che Soh and Iffah Hazirah Mohd Nawi

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2280

Abstract: Anthracnose, caused by Colletotrichum capsici, is a major disease impacting chili plants (Capsicum annum L.) and resulting in significant yield losses globally. This study was aimed at evaluating the ... »

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Position of Species and Molecular Phylogeny Based on Cytochrome C Subunit 1 Gene, Indigenous Pig from Nain Island, North Sulawesi, Indonesia

Revolson Alexius Mege, Mokosuli Yermia Semuel, Iriani Setyawati, Nonny Manampiring, Nova Isye Laurin Ogi and Verawati Ida Yani Roring

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2281

Abstract: The debate on the position of local pig species or indigenous Sulawesi pigs, especially on small islands, is still developing. Local Sulawesi pigs are thought to be the ancestors of local pigs in the ... »

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Enhancing Water Use Efficiency, Maize Productivity and Profitability with Drip and Floppy Sprinkler Irrigation Systems in Arid Climate

Abdul Ghaffar, Muhammad Nadeem, Mudassir Aziz, Sarfaraz Hashim, Muhammad Imran, Ijaz Hussain and Saeed Ahmad

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2282

Abstract: The scarce water resources availability is a major constraint in the sustainable production of agriculture sector in arid regions of the world. Moreover, the conventional surface irrigation system has... »

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Identification of Suitable Genotypes for Pearl Millet (Pennisetum glaucum) Production in Senegal

Ghislain Kanfany, Malick Ndiaye, Yedomon Ange Bovys Zoclanclounon, Oumar Diack, Yagouba Diao, Elhadji Moussa Seck, Seny Diop Mbengue and Ousmane Sy

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2283

Abstract: In Senegal, pearl millet is the most important cereal crops in terms of cultivated areas. Nevertheless, the production is very low compared with the potential of released improved varieties. Thus, the... »

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Rice Blast (Pyricularia oryzae) Disease in Indonesia

Nurul Fitriah, Syamsidah Rahmawati, Dwi Astuti, Ade Nena Nurhasanah, Agus Rachmat, Vincentia Esti Windiastri, Dwi Widyajayantie and Carla Frieda Pantouw

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2284

Abstract: Blast disease in Indonesia has widely spread and caused damage to rice production. It was reported in 2022 that around 32434 Ha area of paddy rice field had been attacked by blast disease. Blast attac... »

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Phenological Stage of the Destruction of Crops by Wild Animals Around Mont Sangbé National Park, Western Côte d'Ivoire

Kouamé Christophe Koffi, Kouakou Hilaire Bohoussou, Kouakou Norbert Kouadio, Kouakou Anselme Brou and Alex Beda

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2285

Abstract: Côte d'Ivoire is a West African country with a wealth of important forest resources. Protected areas have been created in the country to protect some flora and fauna. People living near protected area... »

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Morphological Diversity in Amaranth Lines for Inclusion in the Benin Catalogue of Plant Species and Varieties (CaBEV)

Sylvain Megnonhou, Armel Mensah, David Montcho, Essegbemon Akpo, Olufisayo Kolade, Nokuthula Hlanga, Christophe Gandonou and Clement Agbangla

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2286

Abstract: Amaranth (Amaranthus spp.) is a highly nutritious indigenous vegetable crop in Africa, yet its cultivation remains limited in Benin due to various constraints, including the scarcity of high-quality s... »

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Microbial Diversity in Wastewater Sources and Biological Activated Sludge System

Eunice Chizube Iloms, Chimdi Mang Kalu, Memory Tekere, Karin de Bruyn, Henry Joseph Oduor Ogola and Stephen Meddows-Taylor

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2287

Abstract: Wastewater sources serve as a unique ecosystem with microbial composition determined by the diverse contaminants present in the wastewater. The diverse contaminants and associated microbial communitie... »

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In Vitro Antibacterial Activity, Synergistic Effect and Cytotoxic Analysis of some Traditional Plants against Multidrug Resistant Pathogens

Fariha Ibrahim, Neha Ashfaq, Talha Saleem, Imad Aijaz and Kunuz Fatima

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2288

Abstract: Bacteria are becoming antibiotic-resistant and therefore show multidrug resistance. Therefore, this study aims to evaluate the plant extracts as natural antibacterial agents against multidrug resistan... »

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Growth and Yield Characteristics of Sunflower (Helianthus annuus) Grown with Sewage Sludge and Domestic Sewage Reuse in Dschang – Cameroon

Martin Lekeufack, Diane Fowoung, Guy Valerie Waffo Djumyom, Merlin Boris Kanouo Djousse and Théophile Fonkou

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2289

Abstract: Sewage sludge and sewage from primary treatment of domestic sewage are increasingly being used as alternatives to solve the problems of regressive soil fertility and improve crop yields. Sunflower (He... »

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Control of Three Cotton Major Insect Pests in North-West of Côte d'Ivoire

Diabate Dohouonan, Diby Yao Kan Seraphin, Fondio Drissa, Akpesse Akpa Alexandre Moïse and Tano Yao

IJAB 2025, Volume 33(Issue 03); https://doi.org/10.17957/IJAB/15.2290

Abstract: Cotton harbors a large number of insects that limit its yield despite insecticides spray. This study was carried out to evaluated the efficacy of new insecticides against three cotton insect pests dur... »

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Assessment of the Agronomic Performance of Newly Introduced Rice Varieties in Morocco

Fathalah Elwahab, Mohamed Sedki, Mamadou Sock, Karidioula Lagnigui Clément, Hassan Boukita, Najiba Brhadda and Rabea Ziri

IJAB 2025, Volume 33(Issue 04); https://doi.org/10.17957/IJAB/15.2291

Abstract: This study assesses the agronomic performance of rice varieties introduced in Morocco using a randomized complete block design (RCBD) with three replications at the irrigated site of Sidi Allal Tazi E... »

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Ferulic Acid-Induced Modulation in Photosynthesis, Redox Homeostasis, and Osmolyte Accumulation in Barley (Hordeum vulgare) under Chromium Stress

Sunnia Afzal, Iqbal Hussain, Rizwan Rasheed and Nudrat Aisha Akram

IJAB 2025, Volume 33(Issue 04); https://doi.org/10.17957/IJAB/15.2292

Abstract: Chromium (Cr) is a significant limiting abiotic factor that negatively impacts

agricultural productivity globally. In Pakistan, it is present in water and soil, posing a significant problem for both p... »

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Antidiabetic Activity of Microcapsules of Protium javanicum Leaf Extract in Streptozotocin-induced Diabetic Rats

Ni Luh Ari Yusasrini, I Nengah Kencana Putra, Dewa Gde Mayun Permana and Komang Ayu Nocianitri

IJAB 2025, Volume 33(Issue 04); 15.2293

Abstract: Protium javanicum leaves contain phenolic compounds that can be developed as antidiabetic agents. Extraction and microencapsulation are two ways to utilize phenolic compounds in P. javanicum leaves to... »

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Molecular Confirmation of Dacus ciliatus from Balochistan, Pakistan, Based on mt-COI Gene

Anbareen Gul, Mariam Badam, Syed Hamid Jalal Shah and Javaria Qazi

IJAB 2025, Volume 33(Issue 04); 15.2294

Abstract: The pumpkin fly, Dacus ciliatus, is a destructive pest of Cucurbitaceae crops, poses significant challenges to agricultural productivity worldwide. Despite its economic impact, limited molecular resea... »

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Evaluation of Anti-weevil and Fungicidal Activities of Oregano Essential Oil for Wheat Grains Postharvest Preservation

Assia Houiat, Mounia Oukhouia, Mariam Tanghort, Hanane Chefchaou, Aouatef Mzabi , Samira Oukhouia, Soukayna Hriouech and Adnane Remmal

IJAB 2025, Volume 33(Issue 04); 15.2295

Abstract: Medicinal plants have long been utilized in traditional herbal medicine and play a crucial role in preserving food grains during post-harvest storage. Modern research focuses on exploring the natural ... »

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Reflectance versus Fluorescence Imaging: ANN-Based Approach for Predicting Phenol Content on Red Betel Leaves

Retno Damayanti, Yusuf Hendrawan, Sandra and Bambang Dwi Argo

IJAB 2025, Volume 33(Issue 04); https://doi.org/10.17957/IJAB/15.2296

Abstract: Identification systems using computer vision are important in image recognition technology and artificial intelligence in the agricultural sector. Identifying the phenol content in red betel leaves (P... »

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Sea Cucumber from Talaud Islands: Morphological Characteristics and DNA Barcoding

Nonny Manampiring, Revolson Alexius Mege, Iriani Setyawati, Nova Isye Laurin Mauren Ogi, Mokosuli Yermia Semuel, Verawati Ida Yani Roring and Fernando Watung

IJAB 2025, Volume 33(Issue 04); https://doi.org/10.17957/IJAB/15.2297

Abstract: The recent research on sea cucumber biodiversity in the Wallacea Zone and Sulawesi Sea reveals limited diversity and abundance across different locations. Research has been conducted to determine the ... »

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Cotton Seed Quality and Storage Physiology in Relation to Harvest and Post-harvest Storage Techniques

Muhammad Nadeem, Abdul Ghaffar, Shahid Iqbal, Wazir Ahmed, Muhammad Iqbal, Muhammad Najeeb Rasool and Muhammad Amir Bakhtavar

IJAB 2025, Volume 33(Issue 04); 15.2298

Abstract: Cotton seed mainly loses its viability and vigour during harvesting and

storage. This study was designed to evaluate the effect of picking time and post-harvest storage techniques on germination and v... »

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Reversal of Salt-Induced Oxidative Damage to Buckwheat by Medium Supplementation of Some Nitrogenous and Non-Nitrogenous Stress Relieving Chemicals

Bushra Mehreen, Abdul Wahid, Muhammad Sajid Aqeel Ahmad and Shahzad Maqsood Ahmad Basra

IJAB 2025, Volume 33(Issue 04); https://doi.org/10.17957/IJAB/15.2299

Abstract: Food scarcity is a global issue due to various biotic and abiotic stresses, and salinity stress is a major one. Human activities are adding various salts to agricultural soils, which deteriorate plant... »

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Foliar Application of Biostimulants on Improving Chickpea Growth and Productivity under Drought Conditions

Muhammad Jawad Nazir, Shakeel Ahmed Jatoi, Iqtidar Hussain, Ehtesham Ul Haq and Muhammad Shoaib

IJAB 2025, Volume 33(Issue 04); 15.2300

Abstract: Chickpea (Cicer arietinum L.) plays a vital role as an important source of protein among food legumes. It is cultivated worldwide on a large scale to fulfill human nutritional requirements. Climatic e... »

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Ecological Importance of Physiognomic Characteristics of Floral Biodiversity along the Karakoram Highway, Gilgit-Baltistan Pakistan

Rida Ali, Sujjad Hyder, Sher Wali Khan, Salim Khadim, Masum Haider, Waqar Hussain and Fida Hussain

IJAB 2025, Volume 33(Issue 04); 15.2301

Abstract: The present study, conducted between 2022 and 2023, aimed to document the floristic diversity, life forms, and leaf spectra of the vegetation from Gilgit to Raikot in the Gilgit District. Phytosociolo... »

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A Multivariate Approach to Soil and Crop Yield Under Diverse Cropping System in Punjab Pakistan

Fahad Ali Fayyaz, Irfan Aziz, Muhammad Ansar, Muhammad Akmal, Muslim and Rafique Ahmed

IJAB 2025, Volume 33(Issue 04); 2302

Abstract: Inappropriate land use can deplete nutrient contents of crop land that leads to reduce nutrient concentrations and productivity. However, monitoring nutrient status of crop land can help producer take... »

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Chronic Oral Exposure to V. gracilis Nanoherbs: Toxicity Assessment

Syafruddin Ilyas, Muswita, Salmi, Husnarika Febriani, Dina Khairani and Dini Prastyo Wati

IJAB 2025, Volume 33(Issue 04); 15.2303

Abstract: The nanoherb Vitis gracilis (Guill. & Perr.) Baker has traditionally been used by farmers to increase their stamina and has recently begun to be scientifically researched by researchers. Here, we anal... »

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Soil Spatial Variability Mapping of District Shaheed Benazirabad for Climate Resilient Sustainable Agriculture

Oshaque Ali Mari, Naheed Akhter Talpur, Zia-ul-Hassan Shah, Muhammad Sohail Memon, Inzamam Ali Jamali, Javaria Afzal Arain and Nizamuddin Depar

IJAB 2025, Volume 33(Issue 04); https://doi.org/10.17957/IJAB/15.2304

Abstract: Soil spatial variability mapping is essential for location-specific,

economically optimized fertilizer management, and climate-resilient environment-friendly sustainable agriculture. We developed soil... »

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Influence of Silicon Application on Phosphorus Uptake in Rice and Phosphorus Availability in Acid and Neutral Soils, Central Thailand

Saychol Sukyankij, Chalinee Khougsud, Mutchima Phun-Iam and Thanawan Panich-Pat

IJAB 2025, Volume 33(Issue 04); 15.2305

Abstract: Phosphorus (P) deficiency is a major problem in agricultural soils, and this problem can be addressed by various methods, one of which is the addition of silicon (Si) materials. The aim of this study ... »

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Incidence and Severity of Purple Blotch of Onion (Allium cepa L.) in Burkina Faso and Farmers' Perception

Harouna Sawadogo, Kouka Hamidou Sogoba, Kalira Nadége Pioupare, Dadjata Kéré, Mohamed Sana, Alassane Ouattara, Kadidia Koïta

IJAB 2025, Volume 33(Issue 05); 15.2306

Abstract: Onion is grown intensively in Burkina Faso for its economic importance. Unfortunately, it is attacked by various fungal diseases. One of these diseases is the onion leaf spot, which has a real impact ... »

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Effect of Valine to Lysine Ratios on Growth Performance, Carcass Characteristics, and Immune Response in Broiler Chickens

Waqas Ahmed, Shaukat Ali Bhatti, Muhammad Aziz-ur-Rahman, Muhammad Shoaib, Zeshan Zulfiqar

IJAB 2025, Volume 33(Issue 05); 15.2307

Abstract: The present study aimed to investigate the effect of dietary valine supplementation on growth, carcass characteristics, and immune response in broilers. One day old eight hundred and forty broiler chi... »

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Assessment of Cadmium, Lead, and Copper in Different Milk Marketed and Associated Risks to Consumer Health

Sofia Badar, Muhammad Arshad, Syed Ali Hassan, Laiba Badar

IJAB 2025, Volume 33(Issue 05); 15.2308

Abstract: Heavy metal contamination is a rising issue in food safety and quality due to its negative effects on human health. Increased urbanization and industrialization have led to heavy metals entering the f... »

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Effects of Essential Oils of Eucalyptus citriodora (Myrtaceae) and Lippia multiflora (Verbenaceae) on the Survival of Coconut Palm Bug, Pseudotheraptus devastans in Côte d'Ivoire

Kouadio Jean Marc Koffi, Germain Elisabeth Cynthia Ochou, Koffi Fernand Jean-Martial Kassi, N'klo François Hala, Kouadio Dagobert Kra and Kouassi Allou

IJAB 2025, Volume 33(Issue 05); doi.org/10.17957/IJAB/15.2309

Abstract: Pseudotheraptus devastans (Heteroptera: Coreidae) is a coconut pest in Côte d'Ivoire. Various larval stages and adults cause deformation of young nuts, sometimes leading to them falling off. The searc... »

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Prevalence of Post-harvest Fungal Pathogens of Apples in Nagar Valley, Gilgit Baltistan, Pakistan

Johar Ali, Aqleem Abbas, Waqar Hussain, Saif-Ud-Din, Masum Haider and Abdul Razaq

IJAB 2025, Volume 33(Issue 05); 15.2310

Abstract: Fungal pathogens have posed a serious problem in post-harvest losses of apples, seriously reducing their quantity, quality, and marketability. This infection, in addition to reducing aesthetic and nut... »

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Improving Yield and Quality through Salt-tolerant PGPR Inoculation: A Focus on Vigor Index and Growth Promotion of Wheat (Triticum aestivum)

Tulasa Khatik, Jainish Panchal, Yesha Master and Smita Parekh

IJAB 2025, Volume 33(Issue 05); 15.2311

Abstract: One of the most detrimental abiotic factors affecting crop development and output, particularly in coastal regions, is salinity. The use of Plant Growth Promoting Rhizobacteria (PGPR) as a treatment c... »

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Potential Use of Chemical Ripeners to Improve Sugarcane Yield and Quality in Indonesia: A Review

Arinta Rury Puspitasari, Eko Widaryanto, Moch Dawam Maghfoer and Setyono Yudo Tyasmoro

IJAB 2025, Volume 33(Issue 05); 15.2312

Abstract: The low quality of sugarcane at the early milling is caused by multiple factors, including climatic conditions, excess nitrogen (N) fertilizer and the dominance of late-maturity varieties. Cane Ripene... »

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Enhanced Paddy Disease Classification with Faster R-CNN and ResNet-50: A Deep Learning Approach

Shiva Shankar Jambiga, Palanivel Sivagurunathan and China Venkateswarlu Sonagiri

IJAB 2025, Volume 33(Issue 05); 15.2313

Abstract: The objective of this study was to develop a real-time application for paddy disease classification using 2-Dimensional Convolutional Neural Network (CNN) Faster RCNN and ResNet50. It presents a syste... »

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Characterization and Association Analyses of Fiber Quality and Biochemical Traits of Cotton (Gossypium hirsutum) under Varying Levels of bio-Stimulant

Muhammad Shahnawaz, Waqas Malik, Muhammad Qadir Ahmad and Sami Ul-Allah

IJAB 2025, Volume 33(Issue 05); 15.2314

Abstract: Cotton is a valuable crop around the globe as well as in Pakistan and plays a crucial role in the national economy. But the yield of cotton has been stagnant since last decade due to climate change. B... »

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Response of Dual-Purpose Barley (Hordeum vulgare) to Different Sowing Dates and Nutrient Management

Mubashar Hussain, Muhammad Bahram Khan, Mujahid Ali, Nusrat Javed and Abdul Majeed

IJAB 2025, Volume 33(Issue 05); 15.2315

Abstract: Barley (Hordeum vulgare L.) is a vital crop for food and fodder production in semi-arid regions. Its grain potential is well documented in previous studies but its dual-purpose potential has not been ... »

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Phylogenetic Analysis of the Diacylgycerol Acyltransferase 1 (DGAT1) Gene as Potential Marker for Milk Production in Ruminants

Cher Nicole G Borja, Christine Cherry E Solon, Vanessa Mae C Tumang and Carlo Stephen O Moneva

IJAB 2025, Volume 33(Issue 05); 15.2316

Abstract: The Diacylglycerol acyltransferase (DGAT1) gene is responsible for the synthesis of the diacylglycerol transferase enzyme that plays a crucial role in glycerolipid metabolism. The DGAT1 gene was consi... »

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Estimation of Heavy Metals Toxicity of Four Passerines in the Selected Habitats of Central Punjab, Pakistan

Rimsha Naz, Hammad Ahmad Khan, Naiza Ehsan and Muhammad Shahbaz

IJAB 2025, Volume 33(Issue 05); 15.2317

Abstract: Present paper describes the comparative analysis of heavy metals toxicity for the four selected passerines in the rural and urban habitats of Faisalabad, Pakistan. Of these, the rural habitats were th... »

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Morphological and Molecular Diversity of Fungal Microflora Associated with Kola Tree Witches' Broom Disease (Cola sp.) in Côte d'Ivoire

Mah Eba, Kouakou Théodore Kouadio, Koutoua Séka, Kouabenan Abo, Wilfried Junior Yao, Goué Mominé Dosso, Adou Bedel Carlos N'Guessan and Anthelme-Jocelin N'cho

IJAB 2025, Volume 33(Issue 05); 15.2318

Abstract: In Côte d'Ivoire, kola tree cultivation is a real source of income for thousands of people. However, it is threatened by witches' broom disease, which causes significant yield losses. The aim of this ... »

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Enhancing Asparagus officinalis Seed Germination and Plantlet Development through In vitro Culture

Nagla Abid, Fatima Zahra Akhrif, Ilham El Qadmi, Khaoula El Amrani El Idrissi, Mahmoud Oudghiri, Rabea Ziri and Najiba Brhadda

IJAB 2025, Volume 33(Issue 05); 15.2319

Abstract: Asparagus (Asparagus officinalis L.) is a medicinal plant with high therapeutic value. To date, protocols for improving the in vitro germination of A. officinalis are extremely scarce. The aim of this... »

Full Length Article | Download PDF

Consortium Diazotrophic Bacteria for Increasing Rice (Oryza sativa) Growth, Physiology and Yield

Purwanto, Ni Wayan Anik Leana, Agus Sarjito, Juliana Elizabet Boang Manalu, Risqa Naila Khusna Syarifah and Lafi Na'imatul Bayyinah

IJAB 2025, Volume 33(Issue 05); 15.2320

Abstract: The research was aimed to examine the effectiveness of the Bacillus tropicus (BT), Acinetobacter junii (AJ) and B. subtilis (BS) bacterial consortium in increasing the growth and yield of rice (Oryza ... »

Full Length Article | Download PDF

Effects of Different Light-Emitting Diode (LED) Illumination on Growth and Flowering in Chrysanthemum

Viyachai Taweesak, Ekpong Boonsong

IJAB 2025, Volume 33(Issue 06); 15.2321

Abstract: Chrysanthemums (Chrysanthemum morifolium Ramat or Dendranthema grandiflorum (Ramat) Kitam) are short-day plants, and their growth and flowering are regulated through photoperiod control. Artificial li... »

Full Length Article | Download PDF

NPK Nutrient Source Influence on Performance and Profitability of Intercropped Safflower (Carthamus tinctorius) with Fenugreek (Trigonella foenum-graecum)

Saeid Zehtab Salmasi, Yagoub Raei, Parisa Rostami

IJAB 2025, Volume 33(Issue 06); 15.2322

Abstract: Intercropping and types of fertilizers may influence the productivity and quality of crops. An experiment was carried out to assess how chemical and biological fertilizers impact the yield and economi... »

Full Length Article | Download PDF

Antioxidant Activity and Phytochemical Profile in Sequential Solvent Extract of Faloak (Sterculia quadrifida) Leaves and Stem Bark

Finna Setiawan, Severina Effendi, Jennifer Ruskim, Shandra Bella Riyanto, Putri Valensia Dharmawan, Lady Octavia, Kartini Kartini, Ryanto Budiono, Aditya Trias Pradana, Stefany Sustiyaty Amaral Fernandez and Ketut Adnyana

IJAB 2025, Volume 33(Issue 06); 15.2323

Abstract: Faloak (Sterculia quadrifida R.Br) is an endemic plant of East Nusa Tenggara

Island. This plant was found in the East Nusa Tenggara archipelago, including Timor, Sumba, Flores, Alor and Rote Islands. ... »

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Genetic Marker Identification and Functional Genomics in Date Palm (Phoenix dactylifera L.) for Economic Trait Improvement and Resilience Enhancement

Hoda Abdelaziz Ahmed, Mahmoud Abdelrahim Basry, Hossam Mohamed Zakaria, Shafik Darwish Ibrahim and Khaled Hashem Radwan

IJAB 2025, Volume 33(Issue 06); 15.2324

Abstract: Date palm (Phoenix dactylifera L.) is one of the most economically valuable fruit trees and its genetic markers are essential for future improvement in key economic traits along with stresses resistan... »

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Molecular Response of Banana Plantlets to Drought Stress: A Transcriptomic Study on the Bioprocesses of Morphogenesis and Organ Development

Simon Duve, Husna Nugrahapraja, Erly Marwani, Diky Setya Diningrat, Sri Nanan Widiyanto and John Edward Carlson

IJAB 2025, Volume 33(Issue 06); 15.2325

Abstract: Drought stress is a significant environmental challenge that reduces banana productivity by inducing morphological and physiological changes. Understanding these responses at a molecular level is esse... »

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Inhibitory Activity of Cuscuta monogyna Bioactive Compounds against Pseudomonas aeruginosa

Mostafa Qahtan Al-smail , Ahmed Yas Saeed and Mahmood Khalaf Saleh

IJAB 2025, Volume 33(Issue 06); 15.2326

Abstract: Four active compounds i.e., saponins, alkaloids, glycosides and tannins were extracted from cuscuta (Cuscuta monogyna vahl.). Six concentrations (5, 10, 25, 50, 75 and 100 g/L) of these extracted were... »

Short Communication | Download PDF

First occurrence of Stethobaroides scutellatus in Catasetum sp. in Brazil

Juliana Garlet, Douglas Machado Leite, Isane Vera Kasburg and Amanda Yukari Sassaya

IJAB 2025, Volume 33(Issue 06); 15.2327

Abstract: Orchid cultivation has increased in Brazil, especially in states with a tropical climate, and as this group of plants is cultivated in protected systems, it can suffer attacks from insect pests such a... »

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Cost-effective Biosurfactant Production by Pseudomonas aeruginosa Analyzed through Experimental Design Methodology

Bashir Ahmed, Faiza Anwar Ansari, Erum Shoeb, Jameela Akhtar, Khaizran Siddiqui, Aribah Naz, Babar Ali and Uzma Badar

IJAB 2025, Volume 33(Issue 06); 15.2328

Abstract: Pseudomonas aeruginosa strains are well-known for producing rhamnolipid biosurfactants. Their distinct physico-chemical characteristics and diverse biological functions make biosurfactants useful in t... »

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Effects of Conventional or Slow-release Urea on Productivity, Tillering, Water use Efficiency and Chemical Composition of Tropical Grasses

Bárbara Louise Pacheco Ramos, Márcio dos Santos Pedreira, Abias Santos Silva, Jaciara Diavão, Odair Lacerda Lemos, Luiza Maria Gigante Nascimento, Juan Mark Silva Amorim, Andrei dos Santos Souza, Ana Carolina Silva and Jaislânia de Jesus Nunes

IJAB 2025, Volume 33(Issue 06); 15.2329

Abstract: Nitrogen (N) is an essential nutrient for growth and plant physiology; but a lot of the N is lost during metabolization, especially by N volatilization. This study aimed to evaluate the effects of slo... »

Full Length Article

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First Report of Phomopsis sp. PV-S G38 Caused Leaf Ring Spot Disease on Black Pepper (Pipper nigrum L.) in West Java, Indonesia

Dian Safitri, Maisya Zahra Al Banna, Albertus Fajar Irawan, Septrial Arafat and Muhammad Iqbal Fauzan

IJAB 2025, Volume 33(Issue 06); 15.2330

Abstract: Phomopsis sp. PV-S G38 have been frequently reported as plant pathogens, non-pathogenic endophytes or saprophytes, commonly infecting several agriculturally important crops. Infection of Phomopsis sp.... »

Full Length Article

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Nanoemulsion Biopesticides from Kaempferia Galanga Extract and Patchouli Oil Distillation Waste to Control Bacterial Leaf Blight Disease of Rice

Woro Sri Suharti, Fahmi Khairul Yusuf and Dina Istiqomah

IJAB 2025, Volume 33(Issue 06); 15.2331

Abstract: The study revealed the opportunity for biopesticides based on nanoemulsions derived from Kaempferia galanga and waste from patchouli oil distillation as an alternative control of bacterial leaf blight... »

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Yield, Protein and Amylopectin Contents of Maize BC3F3 Genotype by Selfing of Different Grain Colors

Edy, Sudirman Numba, Andi Takdir Makkulawu and Aminah

IJAB 2025, Volume 33(Issue 06); 15.2332

Abstract: Efforts to produce high nutritional and production maize are pivotal to meet the basic food needs. This study aimed to evaluate maize grain yield, amylopectin, and protein content as a selfing result ... »

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Critical Population Estimates and GIS-based Distribution of Eurasian Otter (Lutra lutra) in Pakistan

Zafar Ali, Muhammad Nafees, Sahar Suleman, Ikram Ullah and Waseem Ahmad Khan

IJAB 2025, Volume 33(Issue 06); 15.2333

Abstract: The Eurasian otter is a keystone species in aquatic habitats in northern areas of Pakistan and is "Near Threatened". Despite the highly suitable habitat, Eurasian otter face ongoing population decline... »

Review Article

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Regulation of Atmospheric Methane Levels by Microorganisms: Could Methanotrophs Play a Role in Mitigating Climate Change?

Stephen Meddows-Taylor and Thanyani Emelton Ramadwa

IJAB 2025, Volume 33(Issue 06); 15.2334

Abstract: Global warming refers to the long-term increase in the Earth's surface temperature, which can lead to significant and wide spread impacts on the planet. These effects include rising sea levels, change... »

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Dipeptidyl Peptidase-IV Inhibition and Antioxidant Activity in Leaf, Bark, Fruit and Seed of Diospyros foxworthyi

Angle Kitt Clearn, Berna Elya and Muhammad Hanafi

IJAB 2025, Volume 33(Issue 06); 15.2335

Abstract: The present research was designed to explore the antioxidant activity and DPP-IV inhibition of secondary metabolites from Diospyros foxworthyi (foxworthyi ebony) leaf, bark, fruit and seed as well as ... »

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Residual Effects of Herbicides on Sunn Hemp, Peanut and Soybean

Bruna Ferrari Schedenffeldt, Rafaela Oliva da Silva, Bruno Barburgian Ramalho Siqueira, Luiz Gustavo Castro Guidette and Patricia Andrea Monquero

IJAB 2025, Volume 33(Issue 01); https://doi.org/10.17957/IJAB/15.2252

Abstract: Understanding the behavior of herbicides with long residual activity in the soil is essential to promote more judicious application, aiming to minimize environmental impacts on subsequent crops. In th... »

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Evaluation of the effect of BAP, Kinetin, Meta-Topolin growth regulators on grape cultivars and molecular analysis of SSR markers

Adkham N. Abdullaev, Zabardast T. Buriev, Akmal M. Asrorov, Jakhongir B. Eshmurzaev, Abduvakhid A. Bolkiev, Sadulla A. Abdullaev, Mukhtor M. Darmanov, Feruza I. Babadjanova, Dilshod E. Usmanov and Khurshida A. Ubaydullaeva

IJAB 2025, Volume 33(Issue 01); https://doi.org/10.17957/IJAB/15.2254

Abstract: Preserving genetic similarity is one of the key points to enhance resilience, functionality, and unique adaptation. Micropropagation is the most reliable approach to preserving genetic similarity. In ... »

CONTACT US
International Journal of Agriculture and Biology (IJAB)
House No 519, Umar Block, Riaz Ul Jannah Colony, Masjad Ismaeel Road,
Lyallpur Town, Faisalabad, Punjab, Pakistan
Email: zafaruaf1@gmail.com, shehzadbasra@gmail.com

International Journal of Agriculture and Biology

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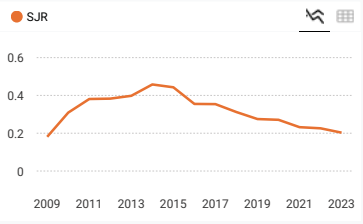

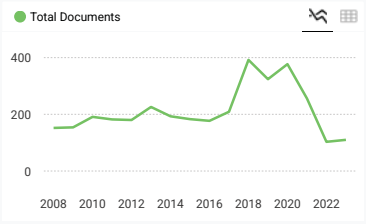

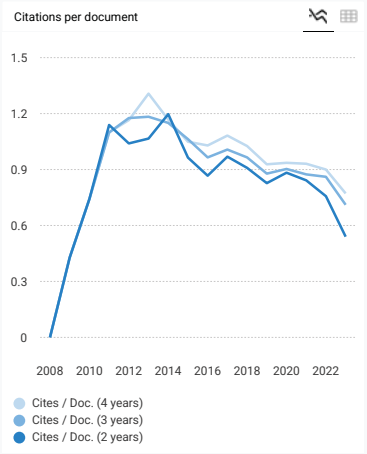

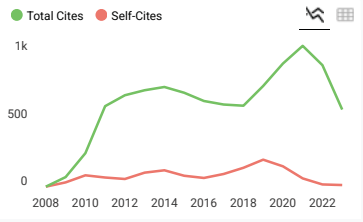

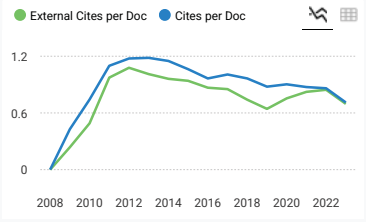

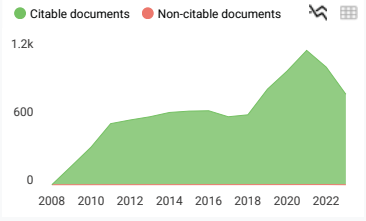

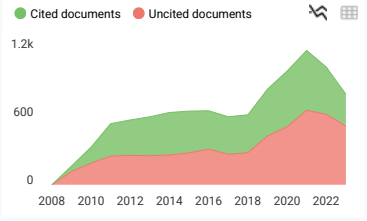

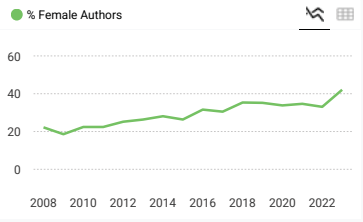

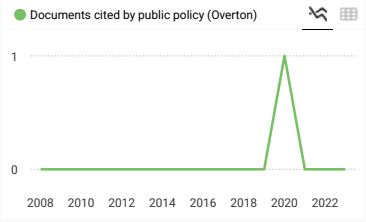

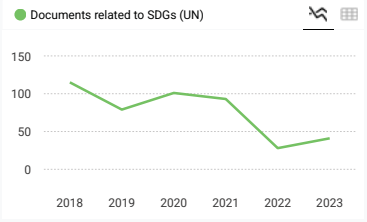

Metrics based on Scopus® data as of March 2024

Z **Zaidoon A. Hassan** 4 weeks ago

I need the official website of the journal for the purpose of submitting a research paper for publication

reply

SCImago Team

Melanie Ortiz 4 weeks ago

Dear Zaidoon,
Thank you for contacting us.
The information referring to the journal's website is not available on our website (you'll see "Information not localized") due to the fact that we could not verify that information with absolute reliability or that it was unfound.
Best Regards, SCImago Team

C **Concerned** 8 months ago

I wish to know why the DOI for the recent paper has an error.

reply

SCImago Team

Melanie Ortiz 8 months ago

Dear Sir/Madam,
Thank you for contacting us.
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
We suggest you contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

B **Boniface Mwami** 9 months ago

Does this journal have an impact factor? Is it indexed in the Web of Science?

reply

SCImago Team

Melanie Ortiz 9 months ago

Dear Boniface, thank you very much for your comment. SCImago Journal and Country Rank uses Scopus data, our impact indicator is the SJR (Check it above). We suggest you consult the Journal Citation Report for other indicators (like Impact Factor) with a Web of Science data source. Best Regards, SCImago Team

F **Faiz Ur Rehman** 1 year ago

Very good journal and im very satisfied from the overall process of research article from submission to publication. The responses is very quick and editorial staff is very Cooperative. I highly recommend the journal

reply

SCImago Team

Melanie Ortiz 1 year ago

Dear Faiz, thanks for your participation! Best Regards, SCImago Team

I **ida marina** 2 years ago

allow me to publish the results of the research in the development of findings and knowledge

reply

SCImago Team

Melanie Ortiz 2 years ago

Dear Ida,
Thank you for contacting us.
We suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

K **Khalid Zamir Rasib** 2 years ago

I want to publish another paper. HOw

reply

SCImago Team

Melanie Ortiz 2 years ago

Dear Khalid, thank you very much for your comment, we suggest you look for the author's instructions/submission guidelines in the journal's website. Best Regards, SCImago Team

I **Iara Nunes** 3 years ago

Olá boa tarde.
Gostaria de saber se aconteceu algum problema com a revista IJAB. Faz tempo que submeti meus artigos mando email e não obtenho resposta. No primeiro artigo que mandei com um mês deram parecer e agora não aparece nada. Todos os email que mandei não obtive retorno

reply

SCImago Team

Melanie Ortiz 3 years ago

Dear Lara,
Thank you for contacting us. Unfortunately, SCImago cannot help you with your request. SJR is committed to help decision-making through scientometric indicators.
Best Regards, SCImago Team

H

Hidayah 3 years ago

Dear Elena,

Could you please inform us about journal ranking of IJAB in 2021? In 2019, it was Scimago Q2, then decrease to Q3 in 2020. What about in 2021?

Many thanks,
Hidayah

reply

SCImago Team

Melanie Ortiz 3 years ago

Dear Hidayah,
Thank you for contacting us. Our data come from Scopus, they annually send us an update of the data. This update is sent to us around April / May every year. The SJR for 2020 was released on 17 May 2021. Therefore, the indicators for 2021 will be available in May/June 2022 and before that date we can´t know what will happen with this journal.
Best Regards, SCImago Team

S

Siti Zahara 4 years ago

I want to publish my research paper in this journal

reply

SCImago Team

Melanie Ortiz 4 years ago

Dear Siti, thank you very much for your comment, we suggest you look for the author's instructions/submission guidelines in the journal's website. Best Regards, SCImago Team

R

RAM NIWAS CHOUDHARY 4 years ago

I want to publish my research paper in your journal

reply

SCImago Team

Melanie Ortiz 4 years ago

Dear Ram,
thank you for contacting us.
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

D

Dr. Dharamsoth Dev Kumar 4 years ago

hai sir/mam
i want publish my research article paper in this (international journal of agriculture

reply

SCImago Team

Melanie Ortiz 4 years ago

Dear Dr. Dharamsoth, thank you very much for your comment, we suggest you look for author's instructions/submission guidelines in the journal's website. Best Regards, SCImago Team

J **J.k.balyan** 4 years ago

Publication charge of research article duration for publication

reply

SCImago Team

Melanie Ortiz 4 years ago

Dear J.k.balyan,
thank you for contacting us. Please see comments below.
Best Regards, SCImago Team

I **Iqra Shafique** 5 years ago

Hi this is Iqra Shafique from Pakistan. I want to publish my article on hospital management system. Can I send my article to you or you can help me in any way. I'll be really very grateful to you.

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Iqra,

Thank you for contacting us. Please see comments below.

Best Regards, SCImago Team

J **Joginder Pal** 5 years ago

Need permission to publish my research in plant pathology aspect

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Joginder,
thank you for contacting us. Please see comments below.
Best Regards, SCImago Team

D **Dr. Sardar Azhar Mehmood** 5 years ago

I have submitted article on 04.06.2019.
but still I have not informed about the status of article

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Dr. Sardar , thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you contact the journal's editorial staff so they could inform you more deeply. Best Regards, SCImago Team

S **Serge NDJADI** 5 years ago

Dear Editor,
I want to introduce my manuscript in your journal for publication. It is titled: Advantage of organic fertilization and intercropping in the market gardening system: A Review".
Is possible and what is the guidance?
I would appreciate your feedback.
Regards
Serge

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Serge,

thank you for contacting us.
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

M **Mohammad Ashraf Ahangar** 5 years ago

Respected editor

I want to publish a research article in your Journal (International Journal of agriculture and biology).

The research article is entitled "Variability of Sarocladium oryzae [(Sawada) Games

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Mohammad,
thank you for contacting us.
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

G **Gurteg Singh Uppal** 5 years ago

Respected Sir/Madam

I have received the below message on 25 April,2019 after my submission of manuscript entitled,"Performance of 'Daisy' mandarin on different rootstocks in North-west region of Indian" but till date I have not received any mail regarding the status of my manuscript. To whom I should consult. Please guide.

DR Gurteg Singh (Ph.D)
Fruit Scientist, Dept. of Fruit Science
Punjab Agricultural University, Ludhiana, Punjab, India

Dear Author,

You have successfully submitted an article for consideration for publication in IJAB. The office of IJAB will e-mail you an assigned number (like IJAB-14-0000) if its Similarity Index is less than 20%. That confirms that your submission is being processed for review. Please always mention this specific assigned number for all future correspondence. The review process usually takes at least 6 weeks. Please do not email back to confirm.

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Gurteg,
thank you for contacting us.
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
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Best Regards, SCImago Team

T **Taddeo RUSOKE** 5 years ago

How much are the article processing charges....

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Taddeo,

thank you for contacting us.
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

Z **Zahid Fazal** 5 years ago

I WANT TO PUBLISH MY RESEARCH PAPER IN THIS BEST JOURNAL OF PAKISTAN WITH INTERNATIONAL STANDARD. HOPEFUL THAT IT WILL BE PUBLISHED.

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Zahid, thank you very much for your comment, we suggest you to look for author's instructions/submission guidelines in the journal's website. Best Regards, SCImago Team

A **Ali Hazrat** 5 years ago

I want to submit a paper to this journal with the request to please processes in time I am fed up from the Pakistan journal of botany due to delay tactics.

reply

W **wagdy** 5 years ago

Pakistan journals waste the authors time due to their delayed reply. We tried to publish in pakistan veterinary journal and they replied after two months that the article not in the scope of the journal

D **Dewa Ngurah Suprapta** 5 years ago

Dear Dr. Elena Corera

One of our paper published in International Journal of Agriculture and Biology Volume 23 No. 1. But until now it is not appeared yet in the Scopus. Is this journal still indexed by Scopus?
Thank you very much for your kind attention and information.

Sincerely yours,

Dewa Ngurah Suprapta

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Dewa, thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you to consult the Scopus database directly. Keep in mind that the SJR is a static image (the update is made one time per year) of a database (Scopus) which is changing every day.
Best Regards, SCImago Team

SCImago Team

Melanie Ortiz 5 years ago

Dear Iram,

It seems that this link is working correctly. We suggest you to contact the journal's editorial staff directly , so they could inform you more deeply. Best Regards, SCImago Team

reply

D **Dr Jagjot Singh Gill** 5 years ago

Sir, I want to submit a research article in esteemed journal International Journal of Agriculture and biology. Please guide me how can i submit this

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Jagjot, thank you very much for your comment, we suggest you to look for author's instructions/submission guidelines in the journal's website. Best Regards, SCImago Team

H **HAFEEZ NOOR** 5 years ago

HI Dr Farooq I want to publish my research article in your reputed journal International Journal of Agriculture'(IJAB).PK

reply

N **Nareshkumar** 5 years ago

What is publication fee .and other formalities for publication.

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Nareshkumar,
thank you for contacting us.
Sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
Unfortunately, we cannot help you with your request, we suggest you to visit the journal's homepage or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

J **John Paul** 5 years ago

Hi

I have an article ready for submission. Its on Conservation Agriculture. What are the requirements for submission?

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear John, thank you very much for your comment, we suggest you to look for author's instructions/submission guidelines in the journal's website or click on "How to Publish" just above. Best Regards, SCImago Team

S **Sushma Sharma** 5 years ago

Sir/Mam

I want to publish my research article in your reputed journal International Journal of Agriculture

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear Sushma,

thank you for contacting us.
Sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
Unfortunately, we cannot help you with your request, we suggest you to visit the journal's homepage (see submission guidelines) or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

F **Farouk** 5 years ago

Hi,

How do I contact the writer about this 1560–8530/2001/03–4–522–526 published article from IJAB: https://www.researchgate.net/publication/233885361_Breeding_in_Mango

Regarding Breeding Mango?

reply

SCImago Team

Melanie Ortiz 5 years ago

Dear user, thank you very much for your comment, unfortunately we cannot help you with your request. Try to contact the journal's editorial office for more information. Best Regards, SCImago Team

S

sajjad khan 6 years ago

IJAB is one of the country leading journal publishing quality research in filed of agriculture and biology. the publication process is quit fair. scientist of various organizations publish their work here. i myself have found IJAB to be the more trusted journal.

Dr. Saajad Khan
Senior Scientific Oficer
NARC Islamabad

reply

M

Mujeeb ur Rahman 5 years ago

Dear Sir,
but it time consuming.most of the journal just waste our time. they even dont tell about the status of the paper. do you know any journal having fast publishing frequency.
thanks

H

Houmanat karim 6 years ago

Dear sir and madam,
I am a researcher at INRA –Morocco.
I have a work in the form of a "short communication" on the agromorphological and molecular characterization of the 61-safflower genotypes entitled: Identification of diverse genetic pools based on the comparison between agromorphological characterization and ISSR markers analysis of a world safflower collection
I am very interested in your newspaper "International Journal of Agriculture and Biology".
I would like to know if you accept the article as a short paper. If the case, thank you to inform me about the modalities of publications, are free or not.
In this connection, I would like to know the instructions for this type of publication.
Thank you in advance.

cordially

reply

T

Tugbobo Oladimeji Samuel 6 years ago

Dear Editor,
Kindly send me your address either e-mail or website I want to send my research article to you for publication.

Thank you,
Dr. Tugbobo Oladimeji Samuel
My E-mail address is tugbobooladimeji@yahoo.com

SCImago Team

Elena Corera 6 years ago

Please, contact International Journal of Agriculture and Biology, you are contacting Scimago Journal and Country Rank.
Best,
SCImago Team

B

Bouziane zehaira 6 years ago

Good morning,
I am a phytopathology researcher, I would like to publish an article in your journal. I would like to know the publication costs and impact factor of your journal and the duration of article processing.

Regards,
Bouziane z

reply

SCImago Team

Elena Corera 6 years ago

Dear Bouziane,
thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you look for author's instructions in the journal's website.
Best Regards,
SCImago Team

B

Burcu yukse 6 years ago

Dear publisher

Is it index sci

reply

SCImago Team

Elena Corera 6 years ago

Dear Burcu,

SCImago Journal and Country Rank uses Scopus data, our impact indicator is the SJR. Check our page to locate the journal. We suggest you consult the Journal Citation Report for other indicators (like Impact Factor) with a Web of Science data source.

Best Regards,
SCImago Team

S

Subhash Chander 6 years ago

Dear Publisher,

I wanted to know about the time period for acceptance/rejection of submitted manuscript, how much time it will take?

Thank you

reply

SCImago Team

Elena Corera 6 years ago

Dear Subhash,

thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you contact journal's editorial staff so they could inform you more deeply

Best Regards,
SCImago Team

A

Aziz Khan 7 years ago

Hello dear sir/madam,

Have a nice day. Here I want to know that this journal will accept review article for publications or only accept research article?

Best regards

reply

SCImago Team

Elena Corera 7 years ago

Dear Aziz, in the link below you will find the information corresponding to the author's instructions of this journal. Best regards, SCImago Team

http://www.fspublishers.org/IJAB-Guide-To-Authors.php

F **faisal** 7 years ago

paper submission

reply

F **faisal** 7 years ago

paper submission

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reply

F **faisal** 7 years ago

i want to submit a paper

reply

F **faisal** 7 years ago

i want to submit a paper

reply

SCImago Team

Elena Corera 7 years ago

Dear Faisal, in the link below you will find the information corresponding to the author's instructions of this journal. Best regards, SCImago Team

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D **Dr Rashmi Sharma** 7 years ago

Publish paper.

reply

R **roodbari** 7 years ago

I would like to publish my article in this journal

reply

SCImago Team

Elena Corera 7 years ago

Dear Roodbari, in the link below you will find the information corresponding to the author's instructions of this journal. Best regards, SCImago Team

http://www.fspublishers.org/IJAB-Guide-To-Authors.php

A **Aaradhana Chilwal** 7 years ago

Respected sir / maam
I want to how much is the publication fees for one research paper.

reply

SCImago Team

Elena Corera 7 years ago

Dear Aaradhana,

In previous comments we have already provided the link of the journal where you will find information related to the publication of articles. For more information not available on

the website, we suggest that you contact the magazine directly. Best Regards, SCImago Team

D **Dr. JASBIR DINGH MANHAS** 7 years ago

Respected Madam/Sir,

I'm working as Asstt. Professor in the Division of Agricultural Extension Education, Faculty of Agriculture, Sher-e-Kashmir University of Agricultural Sciences and Technology of JAMMU.
I want to publish my research paper in your esteemed journal of international repute. My area of research is "Impact Evaluation Studies" on Government Interventions in Agriculture.
Let me know from your good self that is it possible to publish Impact Evaluation Studies in your esteemed journal.

Thanking you.
Regards,

Yours sincerely
Dr. Jasbir Singh Manhas
Asstt. Professor
Division of Agricultural Extension Education, Faculty of Agriculture, Sher-e-Kashmir University of Agricultural Sciences and Technology of JAMMU
J

reply

SCImago Team

Elena Corera 7 years ago

Dear Dr. Jasbir, in the link below you will find the information corresponding to the author's instructions of this journal. Best regards, SCImago Team

http://www.fspublishers.org/IJAB-Guide-To-Authors.php

F **Fatima Fahimy** 7 years ago

I want to upload a paper in this journal

reply

SCImago Team

Elena Corera 7 years ago

Dear Fatima, we recommend that you contact your librarian or do a search on Scopus. Best Regards, SCImago Team

SCImago Team

Elena Corera 7 years ago

Dear user, in the link below you will find the information corresponding to the author's instructions of this journal. Best regards, SCImago Team

http://www.fspublishers.org/IJAB-Guide-To-Authors.php

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Source details

International Journal of Agriculture and Biology

Years currently covered by Scopus: from 2008 to 2025

Publisher: Friends Science Publishers

ISSN: 1560-8530 E-ISSN: 1814-9596

Subject area: Agricultural and Biological Sciences: General Agricultural and Biological Sciences

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