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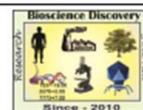
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Research Article



Sida angustifolia Mill. (Malvaceae): An Addition to Flora of Marathwada, Maharashtra

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Abstract

Sida angustifolia Mill. is reported as a new addition to the Flora of Marathwada of Maharashtra. A detailed description, current nomenclature and photographs are provided here to facilitate its easy and correct identification in the field.

INTRODUCTION

The genus *Sida* L. comprises about 250 species chiefly distributed in the tropical and subtropical parts of the World (The Plant List, 2022). In India, the genus is represented by about 18 species including infraspecific taxa (Paul and Nayer, 1988; Paul, 1993), 21 species belong to the sections *Cordifoliae*, *Malachroideae*, *Nelavagae*, *Sida*, *Spinosa* and *Stenindae* (Tambde *et al.*, 2020). Tambde *et al.*, (2016) enumerate 11 species and a variety of the genus *Sida* L. in the Maharashtra state on the basis of mesocarps and morphological characters. Recently Gavade *et al.*, (2020) recorded *Sida angustifolia* with their appropriate identity, occurrence and typification from India.

During floristic re-investigation in Maharashtra, *Sida* was collected from Sillod, Aurangabad District of Maharashtra and perusal of relevant literature the specimen was identified as *Sida angustifolia* Mill. and it was found that the species had no past record of the occurrence in Marathwada (Naik *et al.*, 1998). Therefore, the present report of *Sida angustifolia* Mill. is a new addition for the Malvaceae of Marathwada. A detailed nomenclature, distribution, specimen

examined and photographs are provided. The voucher specimens are deposited in the Herbarium of Department of Botany, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

Sida angustifolia Mill. England (cultivated), s.d. Miller s.n (BM [BM000603894]), Gard. Dict., ed. 8. n. 3. 1768, *Sida angustifolia* Mill. Gavade, ANN. BOT. FENNICI 57: 279-284, 2020.

Annual, ca 1 m tall herbs or subshrubs. Stem erect, terete, stout, branched, pubescent with short stellate hairs. Stipules 2, 0.5–1.5 mm long, ensiform, falcate, equal, acuminate, persistent, basifixed, hairy. Petiole 2–10 mm long, usually with 2–3 spiny emergences at base. Leaves 1–5 × 0.4–4 cm, oblong or ovate, acute or subcordate at base, serrate-crenate at margin, acute, rounded to truncate at apex, stellate-pubescent. Flowers axillary, solitary or 2–5 in clusters on small axillary shoots. Pedicels 1.5–6 mm long, jointed towards the middle, pubescent. Calyx 3–5 × 2.5–4 mm, campanulate, equal, triangular; lobes ca 3 × 2 mm, minute stellate hairy externally and along margins, glabrous inside.

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Fig. 1: Habitat of *Sida angustifolia* Mill.

Corolla 1–1.2 cm in diameter, pale-yellow; petals 5–6 × 3–4 mm, slightly falcate with blunt apex, obovate, minutely stellate-hairy at base. Staminal column 2–2.5 mm long, stellate-pubescent, antheriferous at apex; anthers pale-yellow, filaments 1–1.5 mm long. Ovary 2–3 mm diameter, conical, stellate hairy; styles and stigmas 5, styles 2–2.5 mm long, stigmas globose, purplish. Fruits schizocarpic, 3–5 × 3–4.5 mm long, rounded; mericarps 5, 3–3.5 × 1.5–2 mm, completely included in calyx, trigonous with 2 divergent awns, ca. 0.2 cm long without awn, notched between awns and lower portion of mericarp, dorsally reticulate or wrinkled, awns 0.18–0.2 cm long, covered with stellate and simple hairs. Seeds 1.5–2 mm long, ovoid, rounded trigonous, brownish-black, glabrous throughout.

Flowering & Fruiting: September–January.

Habitat: The species grows abundantly on barren lands and along roadside.

Locality: Sillod, District Aurangabad, Maharashtra. Specimen examined: *Sida angustifolia*: Baha-mas. Bell Island. E. Freid 95-126 (USF). Brazil. du Bresil hort., Anon s. n. (LNN-HS 1157.1.); Paran, Hantschbach 21151 (L2359793). Colombia. Tocaim, A.E. Perez 2123 (COL000141169). India. Maharashtra, Amravati, M.M. Sardesai, s.n. (SPPU); Aurangabad, G.M. Tambde 4 (BAMU); Badnapur, V.N. Naik 37 (BAMU); Kolhapur, P.D. Mahekar s.n. 117 (SUK), G.M. Tambde s.n.70 (BAMU); Jaysingpur, S.K. Gavade 258 (SUK); S.K. Gavade 305 (SUK); Wardha, M.M. Sardesai, s.n. (SPPU); Padoda, R.D. Gore 391 (WCAS); Jaysingpur, S.K. Gavade 261 (SUK); Sillod, G.M. Tambde 21 (SVC), G.M. Tambde 25 (SVC).

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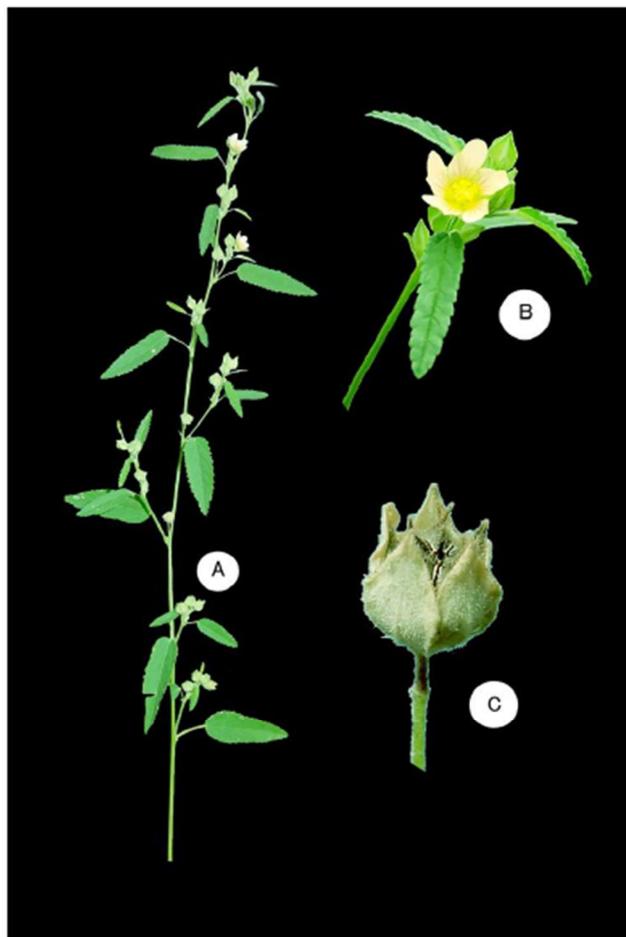


Fig. 2: (A) Habit, (B) Flower, (C) Dehiscent Fruit of *Sida angustifolia*



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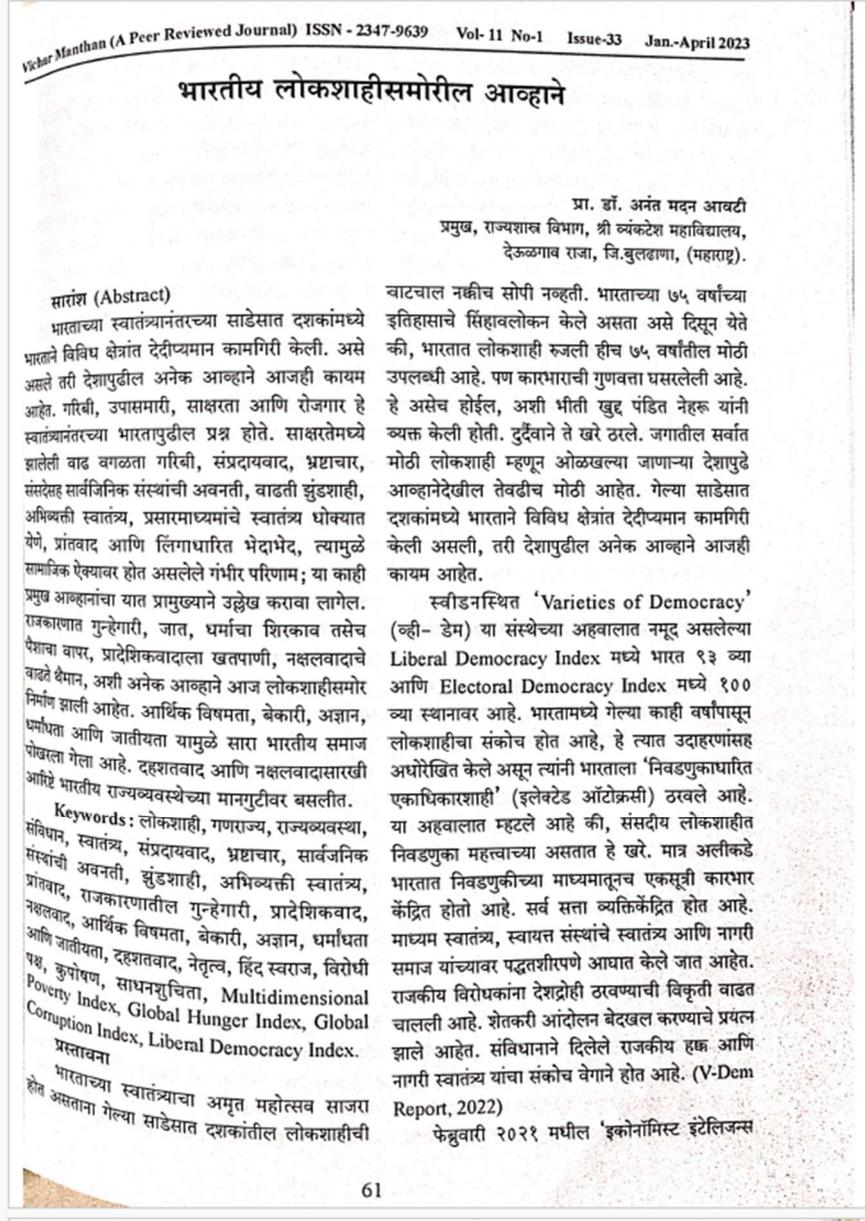
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Cite this article

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युनिट' (ईआययू) या संस्थेचा 'Democracy Index Report' प्रकाशित झाला. त्यामध्येही भारतात लोकशाही निर्देशांक कसा व का घसरत आहे, याकडे लक्ष वेधले आहे. नागरिकांच्या अभिव्यक्ती स्वातंत्र्याला, मूलभूत हक्कांना नाकारण्याचा प्रयत्न होतो आहे, असेही या अहवालात नमूद केले आहे. भारतात 'सदोष लोकशाही' (फ्लॉइड डेमॉक्रसी) आहे हे स्पष्ट करून हा अहवाल म्हणतो : 'भारतामधील अधिकार पदावरील व्यक्ती लोकशाही मूल्यांकडे दुर्लक्ष करते. नागरिकत्वाचा मुद्दा धर्मांशी जोडला जात असल्याने भारताच्या धर्मनिरपेक्ष व लोकशाही प्रतिमेला धक्का बसला आहे' (कुलकर्णी, २०२१).

उद्दिष्टे

१. भारतीय लोकशाहीसमोरील आव्हानांचा शोध घेणे.
२. विविध विचारवंतांनी स्पष्ट केलेल्या लोकशाहीसमोरील आव्हानांचा आढावा घेणे.
३. स्वातंत्र्यानंतरच्या ७५ वर्षांमध्ये विविध क्षेत्रात निर्माण झालेल्या संकटांचा आणि समस्यांचा शोध घेणे.
४. भारतातील सार्वजनिक संस्थांच्या होणाऱ्या अवनतीचा शोध घेणे.
५. लोकशाहीसमोरील आव्हानांवर निवडक उपाययोजना सुचविणे.

भारताच्या संदर्भात लोकशाही निर्देशांक घसरण्यामागच्या कारणांचा आढावा घेतला असता स्वातंत्र्यानंतरची लोकशाहीसमोरील आव्हाने व समस्या आजही कायम असल्याचे निदर्शनास येते. विविध विचारवंतांनी लोकशाहीसमोरील आव्हाने स्पष्ट केली आहेत. जसे की, नानी पालखीवाला यांनी लोकशाहीतील दुरवस्थेची कारणे सांगितली आहेत, ती म्हणजे (१) नागरिकांची कामे होण्याची व त्यांना न्याय मिळण्याची शाधती नाही. भारतात सरकारी नोकरांची संख्या बरीच असूनही त्यांच्याकडून लोकांची कामे फारच थोडी होतात. कायदे भाराभर आहेत, पण न्याय मिळेलच अशी खात्री नाही. (२) देशातील अमर्याद आर्थिक क्षमतेचा उचित उपयोग करून घेण्याबाबतचे अपयश. (३) कारखाने आणि यंत्रसामग्री यांच्यावर भरमसाट पैसा खर्च केला जातो पण शिक्षण, कुटुंब-नियोजन, पोषक

आहार आणि सार्वजनिक आरोग्य या मानवी जीवनाचे गुणवत्ता वाढविणाऱ्या क्षेत्रांमधील गुंतवणुकीबाबतचे अपयश. (४) नैतिक नेतृत्व उभारण्याबाबतचे अपयश (पालखीवाला, २००७:५). रामचंद्र गुहा यांच्या मते भारतीय गणराज्यासमोर चार प्रमुख समस्या आहेत, त्या म्हणजे - धार्मिक तेढ, सामाजिक विषमता, पर्यावरणाचे वाढता न्हास, सार्वजनिक संस्थांच्या अवनती; अशा समस्या आहेत. (गुहा, २०११: ८). दादा धर्माधिकारी यांच्या मते, लोकशाहीचे तीन रोग प्रसिद्ध आहेत- 'अॅब्युज, कर्प्शन अँड केयॉस' - हे तीन रोग जगभरातील लोकशाहीप्रणालींमध्ये दिसून येतात. अॅब्युज - म्हणजे अधिकारांचा दुरुपयोग; अधिकारांचा दुरुपयोग करून जेव्हा कुणापासून लाच घेतली जाते, त्याला भ्रष्टाचार म्हणतात आणि तिसरी गोष्ट - केयॉस - म्हणजे अराजकता माजणे. आज आमच्या देशात कोणत्याही क्षेत्रात कुठलाही नियम नाही व कुठेही अनुशासन राहिलेले नाही. (धर्माधिकारी, १९९८ : १११). भारताचे माजी केंद्रीय गृहसचिव माघव गोडबोले यांनी संसदीय लोकशाहीची अग्निपरीक्षा घेण्यात असे म्हटले आहे की, सांसदीय लोकशाहीचे यशस्विता लोकप्रतिनिधींच्या वर्तनावर अवलंबून असते. आज वर्तमान काळात संसदेचे होत असलेले अवमूल्यन भ्रष्टाचार रोखण्यात शासन यंत्रणेचे अपयश, राजकारणात गुन्हेगारीकरण, विरोधी पक्षातील वैफल्य, निवडणुका आयोगाची भूमिका, लोकप्रतिनिधींचे वारंवार होणारे पक्षांतर, सौदेबाजीचे राजकारण, यासारखी आव्हाने भारतीय संसदीय लोकशाहीसमोर आहेत (गोडबोले, २०१२: ११-४५).

(१) सार्वजनिक संस्थांची अवनती

लोकशाहीतील संस्था जितक्या शक्तिशाली असतील तितकीच लोकशाहीही बलवान होते. लोकशाही चैतन्यपूर्ण व परिणामकारक असण्यासाठी तिला बलवान संस्थात्मक पाठिंब्याची गरज असते. संजोय बागची यांच्या मते 'चीनमध्ये कार्य पार पाडू शकतील अशा संस्थांचा अभाव आहे, तर भारतात अशा संस्था असूनही त्यांच्याकडे दुर्लक्ष केल्यामुळे किंवा त्या भ्रष्ट झाल्यामुळे त्या निरुपयोगी ठरल्या आहेत किंवा त्यांनी कार्य करणेच थांबविले आहे' (Bagchi, 2007 : 166) भारतातील सार्वजनिक संस्था स्वतंत्र व स्वायत्त पद्धतीने चालविणे आवश्यक होते. पण तुटवटाने, भारताच्या शासनासाठी महत्त्वाच्या असणाऱ्या



संस्थांचे गंभीर व दूरगामी स्वरूपाचे खच्चीकरण करण्यात आले आहे. यात राज्यपाल, नियंत्रक व महालेखापरीक्षक, लोकसेवा आयोग, लोकायुक्त, केंद्रातील व राज्यातील निवडणूक आयोग, वरिष्ठ सनदी सेवा, पोलीस व नियामक मंडळांचा समावेश होतो. गेल्या अनेक वर्षांपासून या संस्थांना मुदाम व प्रयत्नपूर्वक कमी लेखून त्यांना कमकुवत बनविण्यात आले आहे. (गोडबोले, २०१५:३६३). निवडणुकीवर देखरेख करणारी यंत्रणा निष्पक्ष असावी अशी अपेक्षा आहे; पण भारतात निवडणूक आयोग आणि सरकारी नोकरशाही पक्षपाती भूमिका, बोटचेपेपणा राबवते आहे, असे वाटायला पुरेशी कारणे आहेत.

लोकशाही मूल्ये आणि संस्थात्मक यंत्रणा यांचे मोठ्या प्रमाणात अवमूल्यन झाले. सर्वच प्रशासकीय संस्थात्मक यंत्रणाच त्यामुळे विस्कटल्यासारखी स्थिती झाली आहे. या संस्थात्मक अवमूल्यनाने अनेक सरकारी यंत्रणांना हानी पोहोचवलेली आहे (गुहा, २०१९: ९). प्रधानमंत्री कार्यालय आतापर्यंतच्या सरकारमधील सर्वात शक्तिशाली संस्था बनली आहे. संसद, मंत्रीमंडळ, निवडणूक आयोग यासारख्या महत्त्वाच्या संस्था अर्णाबाणीच्या काळापासून आतापर्यंतच्या कमकुवत होत असल्याचे दिसून येते. एक काळ असा होता की, जेव्हा न्यायपालिका आणि निवडणूक आयोगासारख्या स्वायत्त संस्था सरकारच्या दबावाला बळी न पडता काम करत असल्याबद्दल जगभरात भारताचे कौतुक होत होते. आता ही परिस्थिती राहिलेली नाही. या संस्थांना सरकारी विचारसरणीच्या अनुरूप बनविण्यासाठी प्रयत्न सुरू आहेत. आज चळवळीतले कार्यकर्ते आणि विरोधी पक्षनेत्यांना अनेक महिने जामीन न देता अटकत ठेवले जात आहे. सत्ताधारी न्यायालयांची आर्थिक कोंडी करित असतात. न्यायाधीशांची पदे न भरणे, सुविधा न देणे, स्वतंत्र वृत्तीच्या न्यायाधीशांना त्रास देणे, असे प्रकार होतात (गव्हाणे, २०२२). राज्यपाल कार्यालयासारख्या पक्षभेदापलीकडील व्यवस्थेचा राजकीय हेतूने वापर, रिझर्व्ह बँकेच्या अधिकार कक्षात कपात, त्यांच्या पंखातील बळ काढून घेणे, केंद्रीय अन्वेषण विभाग (सीबीआय) व सक्तवसुली संचालनालय (ईटी) या तपासयंत्रणांची आणि काही प्रमाणात रिझर्व्ह बँकेची अवस्थादेखील काहीशी तशीच आहे. दरम्यान, संसदेचे कामकाज बहुतेक वेळा ठप्प असते आणि राजकीय पक्षांना होणाऱ्या वित्त पुरवठ्याविषयीही कसल्याच

प्रकारची पारदर्शकता नाही. प्रत्येक सरत्या वर्षाबरोबर आपल्या सार्वजनिक संस्थांचे स्वातंत्र्य कमी होत आहे. (गुहा, २०१९:९)

केवळ संस्थात्मक व्यवहारांद्वारे लोकशाही राबवणे आणि तिचे रक्षण करणे कसे जिंकितेच असते, याची काही उदाहरणे पाहण्यासारखी आहेत. या सगळ्याच उदाहरणांमध्ये प्रस्थापित संस्थांनी अंगचोरपणा केल्याचे दिसते. शाहबानो खटल्यात सर्वोच्च न्यायालयाचा निर्णय फिरवणारा कायदा संसदेने केला आणि 'अल्पसंख्य' समूहांच्या वेगळ्या वैधानिक अस्तित्वावर शिकामोर्तब केले. त्या कायद्याला आब्व्हान दिले गेले हे खरे, पण त्याच्या घटनात्मकतेबद्दल न्यायालयाने दिलेला निर्णयही पुरेसा सुस्पष्ट नाही. राजकीय दडपणामुळे संसदेने घेतलेला निर्णय निरोगी लोकशाहीला मारक असाच होता. सरकारला हा निर्णय मागे घ्यायला संसद भाग पाडू शकली नाही. संस्था संकुचित आणि अदूरदृष्टीने वागल्या की काय होते, याचे हे उदाहरण म्हणता येईल. दुसरे उदाहरण शीख हत्याकांडाच्या अपुऱ्या चौकशीचे आणि कारवाईचे आहे. या उदाहरणात दीर्घकालीन दिरंगाई आणि बेपर्वाई दिसते. (पळशीकर, २०१३: ४८)

सरकारी नोकरशाहीत आणि लष्करात राजकारणाचा शिरकाव केला. प्रसारमाध्यमे आणि नागरी हक्कासाठी कार्य करणाऱ्यांची मुस्कटदाबी केली. उच्च शिक्षण देणाऱ्या संस्थांना अवनत अवस्थेत आणले. नोकरशाही आणि पोलीसदेखील आता कमी-अधिक प्रमाणात सत्ताधारी पक्षाच्या हातातील बाहुले बनले आहेत. (गुहा, २०१९: ९)

(२) संसदेच्या कामकाजातील गोंधळ आणि डासळती प्रतिमा

सुमारे १०२ वर्षांपूर्वी म्हणजे १९०९ साली 'हिंद स्वराज' या पुस्तकात. इंग्लंडमधील संसदेविषयी गांधीजी म्हणतात, "तुम्ही ज्याला पार्लमेंटची माता म्हणता ते इंग्लंडचे पार्लमेंट वांझोटे आहे. आजपर्यंत पार्लमेंटने स्वतःहून एकसुद्धा चांगले काम केलेले नाही. भारतात संसदीय व्यवस्था अस्तित्वात येण्यापूर्वी सुमारे ४१ वर्षे आधी गांधीजींनी ही मते मांडली आहेत आणि भारतातील संसदीय व्यवस्थेला ७२ वर्षे पूर्ण झाल्यानंतरही भारताच्या संसदेच्या संदर्भात त्यातील कानामात्राही बदलावा असे आपल्याला वाटू नये, इतके विलक्षण द्रष्टेपण गांधीजींच्या या विचारात पाहायला मिळते. संसदेच्या



दोन्ही सभागृहांच्या कामकाजाकडे कटाक्ष टाकला, तर पूर्वीच्या तुलनेत त्याचा दर्जा खालावल्याचे जाणवते. संसद ही कमी-अधिक प्रमाणात रबर स्टॅम्प बनली आहे, कारण बहुतांश महत्त्वाची विधेयके चर्चेविना मंजूर केली जातात. अलीकडे संसदेतील प्रश्नोत्तराच्या तासभचे महत्त्व लयाला गेले आहे. संसदेच्या कामकाज नियमावलीत त्यासाठी विविध आयुधे आहेत. मात्र ठरावीक खासदार वगळता त्यांचा वापर फारसा कोणी करीत नाही. त्यापेक्षा संसदेत गदारोळ माजवून कामकाज हाणून पाडण्यातच ते स्वतःला अधिक घन्य समजतात. एकेकाळी वर्षातून १००-१२० दिवस कामकाज करणारी संसद आजकाल जेमतेम ७०-८० दिवस काम करताना आढळते. संसदीय कामकाज मंत्रालयाच्या अहवालानुसार भारतीय संसदेचे २०२२ या वर्षात फक्त ७० दिवस कामकाज झाले आणि २०२२ च्या पावसाळी अधिवेशनाचा विचार केला, तर लोकसभा आणि राज्यसभेत प्रत्येकी ६० तास म्हणजे दोन्ही सभागृहांचे मिळून १२० तास कामकाज होणे अपेक्षित होते, पण दोन्ही सभागृहांचे कामकाजाचे तास मिळून २६.८ तास कामकाज झाले. संसदीय कामाचा एकूणच कालावधी कमी होत असताना अनेक महत्त्वाच्या विधेयकांची उपेक्षा होणे व अवघ्या काही मिनिटांत एखाद्या प्रस्तावाचे कायद्यात रूपांतर होणे हे ओघाने आलेच. अर्थात याची सुरुवात तरी पूर्वीपासूनच झाली आहे. संसदेचे कामकाज चालवण्यासाठी दर तासाला १.५० कोटी रुपयांपेक्षा अधिक खर्च केला जातो. प्रत्येक दिवशी दोन्ही सभागृहांचे कामकाज सुमारे सहा तास चालते. एकूण वार्षिक खर्चाचा विचार करता. संसद, सभागृह चालवायला प्रत्येक मिनिटाला अडीच लाख रुपयांपेक्षा अधिक खर्च येतो. (thellogicalindian.com) जर एखादा दिवस कामकाज झाले नाही, तर दोन कोटी रुपयांचे नुकसान होते. सातत्याने कामकाजात अडथळा आणणे, कामकाज तहकूब होणे, संसदेत गोंधळ करणे, अध्यक्षांच्या आसनासमोर गर्दी करणे, कागदपत्रे भिरकावणे, विशिष्ट पंहराव, सभात्याग आणि बहिष्कार अशा अनेकविध मार्गांनी विरोधक आपला निषेध व्यक्त करत असल्याने अधिवेशनाचा बहुतेक काळ वाया जातो. जेव्हा संसदेचे कामकाज एका मिनिटासाठी थांबते त्या वेळी देशाचे २.५० लाख रुपयांपेक्षा जास्त रुपये वाया जातात (सिंग, हे., २०१९).

(३) कमकुवत विरोधी पक्ष

लोकशाही देशात संविधान, अधिकाराविषयी जागृत जनता आणि सक्षम विरोधी पक्ष हे सर्वयत्किमान सरकारला हुकूमशाही सरकार होण्यापासून अहिंसेच्या मार्गाने रोखू शकतात. पण आज प्रसारमाध्यमे, नागरी समाज, गैरसरकारी संस्था आणि विरोधी पक्षांच्या विरोधात अवकाश आंकुचन पावला आहे. बहुसंख्यकांची सत्ता मानवीय प्रतिष्ठेला अनुकूल नाही. उलट अल्पसंख्यकांचे स्वातंत्र्य मानवीय प्रतिष्ठेला अनुकूल आहे. जेथे विचारांचे स्वातंत्र्य असेल, तेथे विचारांचा गट असलाच पाहिजे म्हणून लोकशाहीत अधिकृत विरोधी पक्ष असतो (धर्माधिकारी, १९९८: १११).

लोकसभेत कोणत्याही पक्षाला १० टक्क्यांपेक्षा जास्त जागा मिळालेल्या नसल्याने लोकसभेत अधिकृत विरोधी पक्षनेता नाही, ५३ खासदार असलेला काँग्रेस हा सर्वात मोठा विरोधी पक्ष आहे. सुदृढ लोकशाही व्यवस्थेत विरोधी पक्ष या घटकाचे अनन्यसाधारण महत्त्व असते. काही किरकोळ अपवाद वगळता, विरोधी पक्ष आपल्या देशात १९५२ पासून आजपर्यंत कमकुवत राहिलेला आहे. आजतरी हे अगदी ठळकपणे जाणवते आहे. कोरोना संकटामुळे अनेकांचे रोजगार हिरावले गेले आहेत, अनेकांचे उत्पन्न कमी झाले आहे. महागाई गगनाला भिडली आहे. अल्पसंख्याक समाजात निर्माण झालेली भीतीची भावना, दलित व आदिवासींवर होणारे अत्याचार, कुचकामी व महागाडी शिक्षण व्यवस्था, प्रशासकीय भ्रष्टाचार आणि दिरंगाई अशा आयुष्याशी थेट संबंध असणाऱ्या वास्तव समस्यांबाबत विरोधी पक्ष आवाज उठवताना दिसत नाही. विरोधी पक्ष कधी नव्हे इतका प्रभावहीन झाला आहे. पाचव्या लोकसभेपर्यंत म्हणजे १९७७ पर्यंत विरोधी पक्षांचे संख्याबळ आजच्यापेक्षा कमीच होते. पण त्याही काळात विरोधी पक्ष इतके हवालदिल झाले नव्हते. इतकेच काय आठव्या लोकसभेत राजीव गांधींना जवळपास ८० टक्के जागा मिळाल्यानंतरही तत्कालीन विरोधी पक्ष इतके दीनबाणे भासले नव्हते. म्हणजेच हा लोकसभेतील कमी संख्याबळाचा परिणाम नाही. त्यामुळे विरोधी पक्षांच्या या गलितगात्र अवस्थेची कारणे वेगळी आहेत. केवळ सभागृहातच आवाज उठविणे इतकेच विरोधी पक्षांचे कार्य नाही. लोकांचे प्रश्न घेऊन रस्त्यावरची लढाई लढण्याची (अर्थातच शांततेच्या मार्गाने) जबाबदारीही त्यांचीच



आहे. पण तेदेखील होताना दिसत नाही. विरोधी पक्षाची जनतेची असलेली नाळ तुटली आहे, विरोधी पक्षाकडे प्रगल्भ नेतृत्व नाही.

(४) राजकारणातून साधनशुचितेला तिलांजली लोकशाहीची मूलभूत तत्त्वे मुक्त आणि निष्पक्ष निवडणुकांची हमी, अल्पसंख्यकांचे हक्क, प्रसारमाध्यमांचे स्वातंत्र्य आणि कायद्याचे राज्य हे आज घोष्यात आले आहे. पूर्वीच्या निवडणुका या बळगंशी विकासाच्या प्रश्नांवर आणि तात्त्विकतेने लढल्या जात असत. इतरांचे ऐकणारी, प्रसंगी विरोधी मतांचाही सन्मान करणारी आणि तरीही एका ध्याय्यात गुंफू पाहणारी सर्वसमावेशकता हा भारताच्या कल्पनेचा आधार असताना त्याला धक्के पोचविण्याचे प्रयत्न सुरू आहेत. आज लोकशाहीला दमन आणि प्रलोभन या दोन्हींचाही धोका जाणवतो आहे. पूर्वी निवडणुकांच्या काळात साधनशुचिता पाळली जात असे. या पार्श्वभूमीवर आताच्या निवडणुकांमध्ये राजकीय पक्षांना कसलाच निर्बंध राहिलेला नाही. अनेक राजकीय नेते निवडणुकांच्या काळात प्रतिपक्षावर आणि विशेषतः सत्ताधारी पक्षावर टीका करताना निम्नस्तरीय भाषेचा वापर करतात. लोकशाही प्रक्रियेत जातीयवादाचा शिरकाव, हे भारतीय लोकशाहीपुढील ज्वलंत आव्हान बनले आहे. भारतीय राज्यघटनेने एक व्यक्ती, एक मूल्य, एक मत अशी व्यवस्था केलेली असताना जात, धर्म, पैसा या प्रभावाखाली मतदार मतदानाचे स्वातंत्र्य गमावून बसतो. मूल्यसंकोच होण्याचा वेग सध्या वाढलाय. आज नेत्यांच्या पुढे दहशतीमुळे मंत्रीमंडळातील सहकारी किंवा खासदार मोकळेपणाने बोलू शकत नाहीत. (कुलकर्णी, २०२१). भारतीय राज्यघटनेत स्वातंत्र्य, सार्वभौमत्व, संघराज्यीय एकात्मता, धर्मनिरपेक्षता, समाजवाद, लोकशाही ही मूलभूत तत्त्वे म्हणून सरनाम्यात समाविष्ट केली आहेत. मात्र, या प्रत्येक मूल्याला आज तडे दिले जात आहेत. आपल्या मजिप्रमाणे काम करून घेण्यासाठी दुसऱ्याच्या अधिकारांचा संकोच केला जात आहे. सार्वभौमत्वामध्ये अंतिम सत्ता लोकांची गृहीत आहे. मात्र लोकांना सत्तेपेवजी फक्त गृहीत धरले जात आहे. (कुलकर्णी, २०२१)

(५) अभिव्यक्ती स्वातंत्र्य (विशेषतः प्रसारमाध्यमांचे स्वातंत्र्य) घोष्यात
व्ही-डेम संस्थेच्या अहवालानुसार गेल्या काही वर्षांत अभिव्यक्ती स्वातंत्र्य विशेषतः माध्यमांच्या

स्वातंत्र्यावर अंकुश लावण्याचा प्रयत्न झाला आहे. गेल्या काही वर्षांत माध्यमांकडून सरकारची बाजू घेण्याचे प्रमाण खूप वाढले आहे. सरकारकडून पत्रकारांना त्रास देणे, माध्यमांवर सेन्सॉरशिप लादण्याचा प्रयत्न करणे, पत्रकारांना अटक करणे, अशा घटनांमध्येही वाढ झाली आहे. प्रसारमाध्यमांच्या आणि सिव्हिल सोसायटीच्या कार्यकर्त्यांच्या विरोधात राजद्रोह, मानहानीचे खटले दाखल करण्याच्या वाढत्या प्रमाणावरही व्ही-डेम संस्थेच्या अहवालात भाष्य करून मत व्यक्त करण्यात आले आहे. राजकीय विरोधकांना शह देण्यासाठी सरकारी यंत्रणांचा वापर केला जात आहे. राजकीय विरोधकांवर आरोप लावून त्यांना तुरुंगात ठेवणे हे नित्याचेच झाले आहे. अभिव्यक्ती स्वातंत्र्य आणि सहवास हा अधिकारापेवजी एक विशेषाधिकार बनत चालला आहे.

लोकशाही देशात विचारवंत, पत्रकार इत्यादींचा बुद्धिवादी वर्ग हा देशाच्या राजकारणाला दिशा देऊ शकतो. पण या बाबतीतही चित्र निराशाजनक आहे. (गाडगीळ, २००९:३४९). प्रसारमाध्यमे एखाद्या राजकीय पक्षाबद्दल अवास्तव चित्र मतदारांसमोर निर्माण करून त्या राजकीय पक्षाची नसलेली प्रतिमा मतदारांच्या मनावर ठसविली जाते. त्यांच्या मनावर बिंबविण्याचा सतत प्रयत्न करतात. परिणामी मतदार स्वतःची निर्णयक्षमता गमावून बसतो, ही बाब लोकशाहीसाठी अत्यंत घातक ठरते. प्रसारमाध्यमांद्वारा राजकीय पक्षांच्या कार्याबाबत दिशाभूल करणारे अहवाल प्रसारित केले जातात. वर्तमानपत्रे व दूरसंचार वाहिन्या या पैसेवाल्यांच्या आणि मोठ्या राजकीय पक्षांच्या ताब्यात आहेत. खोट्या बातम्या तयार करून हवे तसे जनमानस घडवण्यात ते तरबेज आहेत. कोणाला निवडून आणायचे आणि कुणाला पाडायचे याचे निर्णय ही प्रसिद्धीमाध्यमे करतात. नव्याने निर्माण झालेली सोशल मीडिया ही वरकरणी सर्वांना खुली असली, तरी प्रत्यक्षात ती संघटितपणे ताब्यात घेतली जाते आणि तिचा कमालीचा दुरुपयोग केला जातो.

(६) धार्मिक कट्टरतावाद व झुंडशाही ही लोकशाही मूल्यासाठी घातक

भारतीय लोकशाहीचे सर्वात मोठे सामर्थ्य म्हणजे विविधतेला प्राधान्य व धर्मनिरपेक्ष राज्य हे आहे. पण ही ओळख पुसण्याचे पद्धतशीर प्रयत्न झाले आहेत. धर्म आणि जात यांचा उपयोग द्वेषभावना वाढवण्यासाठी



केला जातो. भारतातील सद्यकालीन राजकारणाची स्थिती संप्रदायवादासाठी अधिक पोषक झाली आहे. बहुसंख्यकांचे राजकारण करण्यावर सर्वच राजकीय पक्षांचा भर आहे. बहुसंख्य असणारी हिंदू ब्रह्मोत्तम बँक वळविण्याचा प्रयत्न राजकीय पक्षांकडून केला जातो. कट्टर हिंदुत्ववादी राजकारणाबरोबरच अल्पसंख्यकांप्रति तुष्टीकरणाने धोरण अवलंबल्याने संप्रदायवादाला चालना मिळाली. उदा. शहाबानो प्रकरण, मंदिर-मशिदीचे राजकारण इत्यादी. राजकीय पक्ष निवडणुकीसाठी धर्माच्या आधारावर मते आकर्षित करण्यासाठी अशी पावले उचलतात. धार्मिक समूह राज्य व्यवस्थेवर वर्चस्व निर्माण करून शासन निर्णय, कायदे, घोषणांच्या माध्यमातून शासकीय यंत्रणेचा वापर करून जमातवादी प्रक्रियेला गोंजारण्याचे काम केल्या जाते. त्यामुळे संप्रदायवाद अधिक बळकट होतो. सत्ता प्राप्त करण्यासाठी व सत्ता टिकवून ठेवण्यासाठी राजकीय पक्षांद्वारे प्रत्यक्ष व अप्रत्यक्षरीत्या धार्मिक समुदायात धार्मिक अस्मिता जागृत करण्याचे काम केले जाते. कट्टरतावाद्यांनी हिंदूंच्या मनात मुस्लिमांविषयी अविश्वास व मुस्लिमांच्या मनात असुरक्षिततेची भावना निर्माण केल्याने भारतात हिंदू-मुस्लीम संघर्ष होऊन सांप्रदायिक हिंसाचाराच्या घटना घडतात. सांप्रदायिक हिंसाचाराच्या घटना म्हणजेच झुंडीच्या राजकारणाची उदाहरणे आहेत. मागील काही वर्षांत जमावाने केलेली हत्या (मॉब लिचिंग) या सारख्या घटनांतून कट्टरता दिसून येते. देशाच्या कानाकोपऱ्यात कायदा हातात घेऊन झुंडशाही मनोवृत्तीचे प्रदर्शन घडविण्याचे असे अनेक प्रकार घडले आहेत. या सर्व घटनांमधून सर्वसामान्यांच्या नजरेतून न्यायदानाच्या प्रक्रियेबाबत बदलती मानसिकता समोर येते आणि हा जो बदल जाणवतोय तो अत्यंत घातक आहे. अशा घटनांमुळे समाजात चिंतेची आणि असुरक्षिततेची भावना निर्माण होत आहे आणि त्याने सौहार्दाच्या वातावरणाला तडा जातो. देशातील तपास व न्याययंत्रणेच्या भूमिकेत शिरण्याची जमावाची ही कृती अराजकतेचे लक्षण आहे. सोशल मीडियावरून धार्मिक आणि राजकीय ध्रुवीकरण करण्याचा प्रयत्न केला जातो. लोकशाही मूल्ये आणि स्वातंत्र्यासंदर्भात याचा नकारात्मक परिणाम होतो. देशातील राजकीय वातावरण यामुळे दूषित होते (अहमद, २०२०). समजावणे व समजावून घेणे याच्या भरवशावर जे राज्य चालते, त्याचेच नाव लोकशाही. बहुसंख्येच्या सत्तेचे नाव

लोकशाही नव्हे. अल्पसंख्यकांचे स्वातंत्र्य व सुरक्षितता हेच लोकशाहीचे वैशिष्ट्य आहे. (धर्माधिकारी, १९९८, १११).

(७) गुन्हेगारी आणि पैशांचा प्रभाव

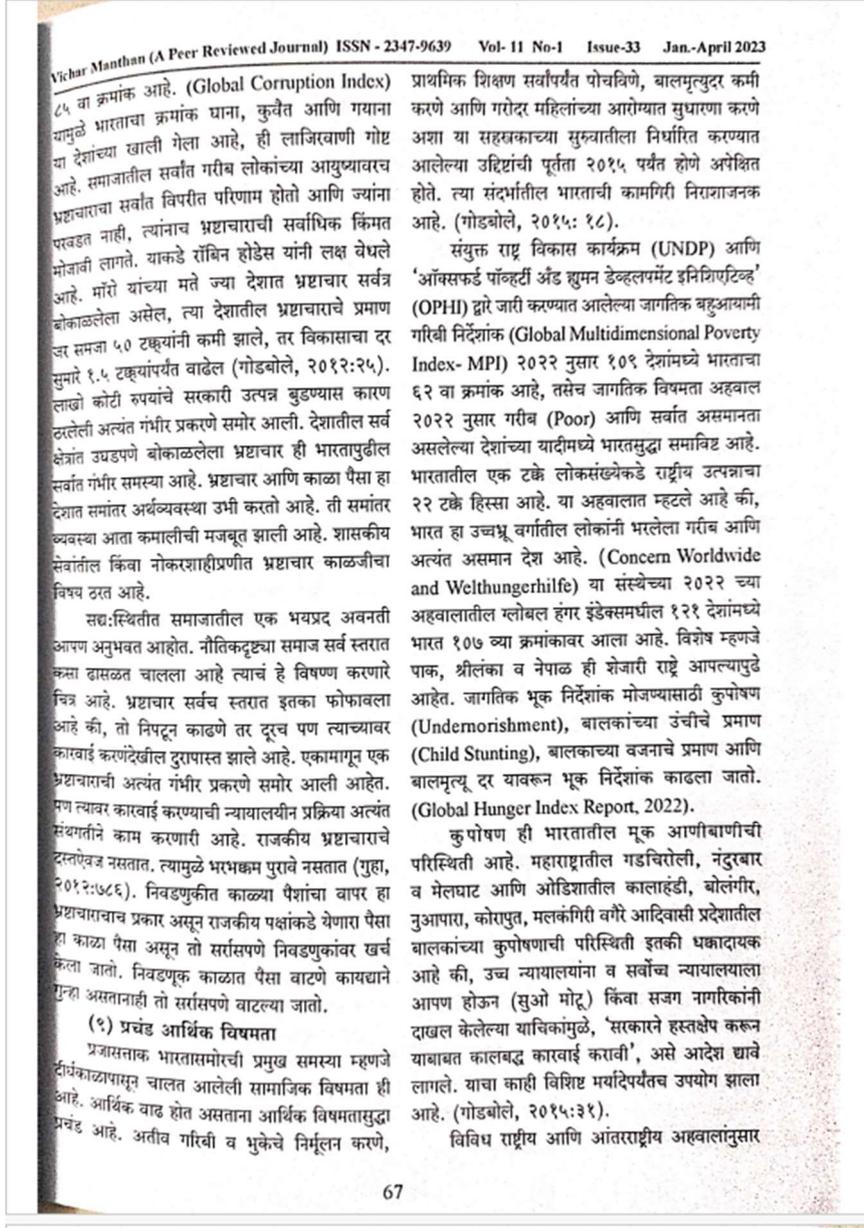
लोकशाहीतील निवडणुका बऱ्याच वेळा हुकूमशाहीला आळा घालण्याऐवजी सत्ताधान्यास सक्षम बनविते. उदाहरणार्थ, भारतातील निवडणुकांमध्ये गुन्हेगारी आणि पैशांचा प्रभाव वाढलेला आहे. १९९३ मध्ये व्होटर समितीचा रिपोर्ट, नंतर २००२ मध्ये घटनेच्या कामकाजाची समीक्षा करण्यासाठी नेमलेल्या आयोगाने स्पष्टपणे सांगितले की, राजकारणात गंभीर गुन्हे करणाऱ्यांची संख्या वाढते आहे. लोकशाही सुधारणाविषयक राष्ट्रीय निवडणूक निरीक्षण संस्थेचा अहवाल सांगतो, की २००९ मध्ये गंभीर गुन्हांचे आरोप असलेले ७६ लोक संसदेत पोहोचले. २०१९ मध्ये ही संख्या १५९ वर पोहोचली. याचा अर्थ असा की, राजकीय पक्षांनी गुन्हेगारी पार्श्वभूमी असलेल्या उमेदवारांना तिकिटे दिली. जिंकून घेणाऱ्या उमेदवारांनाच आम्ही उभे करतो असा एक युक्तिवाद पक्षांकडून केला जातो. ही तर लोकशाहीची मोठी विटंबना आहे (दर्डा, २०२२).

संविधानानुसार, कोणीही निवडणूक लढवू शकतो. पण व्यवहारात, मात्र तुमच्याकडे पैसे आणि एकगुट्ट मतदान असल्यास निवडणुकीत विजयाची अधिक शक्यता असते. सैद्धांतिकदृष्ट्या, सरकार स्थापन करण्यासाठी तुम्हाला सभागृहात बहुसंख्य जागा जिंकणे आवश्यक आहे. व्यवहारात, तुम्ही प्रतिनिधींना विकत घेऊन तूट भरून काढू शकतात याची आज प्रचिती येते. लोकप्रतिनिधी निवडण्यात पैशाचे अतिरेकी महत्त्व वाढलेले आहे. निवडणुकीत पैशांचा वारेमाप वापर होतो. ज्याच्याकडे पैसा नाही, त्याला निवडणूक जिंकता येणे जवळपास अशक्य आहे. विधानसभा किंवा लोकसभा निवडणुका वा अगदी ग्रामपंचायतीच्या निवडणुका होतात, तेव्हा पैसा महत्त्वाची भूमिका बजावतो. पैशाने बलवान नसणारे; पण चांगले व गुणवान लोक निवडणूक लढवू शकत नाहीत, अशी लोकशाहीस घातक स्थिती सध्या आहे (गव्हाणे, २०२२).

(८) भ्रष्टाचार

२०२१ च्या ट्रान्स्पारन्सी इंटरनेशनलच्या अभ्यासानुसार १८० देशांच्या यादीत भारताचा भ्रष्टाचाराच्या प्रादुर्भावामाबत





कुपोषणाच्या विविध निर्देशकांवरून भारताची कामगिरी असमाधानकारक असल्याचे दिसून येते. UNICEF च्या मते, २०१७ मध्ये कमी वजनाच्या मुलांची संख्या असलेल्या देशांच्या यादीत भारत १० व्या क्रमांकावर होता. (Unicef Report). याशिवाय, २०१९ मध्ये, 'द लॉसेट' नियतकालिकाच्या अहवालात असे म्हटले आहे की, भारतात पाच वर्षांखालील १.०४ दशलक्ष मृत्यूंपैकी जवळजवळ दोन तृतीयांश मुलांचे कुपोषण हे कारण आहे. देशातील कुपोषणामुळे झालेल्या मृत्यूंची ही आकडेवारी चिंताजनक आहे (Sharma, 2020).

(१०) नक्षलवाद

संविधान अस्तित्वात आल्यापासूनच ते मान्य नसणारा, देशाने अंगीकारलेली संसदीय लोकशाही अमान्य करणारा, सनदशीर मार्गाने आंदोलने केली पाहिजेत हे म्हणणे घुडकावून लावणारा एक वर्ग अस्तित्वात आहे. नक्षलवादी चळवळीने देशाच्या विविध राज्यांतील सीमावर्ती व दुर्गम प्रदेशांत जाळे पसरवले आहे. या अंतर्गत युद्धात शासन विरुद्ध नक्षलवादी, माओवादी किंवा सशस्त्र संघर्षकारी असा मर्यादित हा लढा न राहता तो सामान्य जनांचा, शांतीप्रिय नागरिकांचाही बळी घेत असल्याचे चित्र आज देशात सर्वत्र दिसत आहे. देशातील ११ राज्यांमधील ९० जिल्ह्यांत ही चळवळ पसरली आहे. नक्षलवादी आणि प्रशासन यांच्या संघर्षात आतापर्यंत ६००० पेक्षा अधिक लोकांचा मृत्यू झाला आहे. (सुतार, २०१९).

या नक्षलवादी चळवळीने एका बाजूला राज्यसंस्थेशी युद्ध छेडणे आणि दुसऱ्या बाजूला स्थानिक आदिवासी समाजाला वेठीस धरणे हा प्रकार सुरू आहे. या समस्येचा सामना करण्यासाठी, पोलीस दलाच्या दमनशक्तीचा वापर राज्यसंस्था करते आहे. त्या प्रक्रियेत आदिवासी होरपळून निघत आहेत. त्यामुळे हा तिढा अधिकाधिक कठीण बनत आहे. गुप्तचर विभागाच्या अहवालाने हे दाखवून दिले आहे, की नक्षलवाद्यांनी भारतातील व भारताबाहेरील राष्ट्रविरोधी शक्तींशी संपर्क प्रस्थापित केले आहेत. स्वदेशात वाढलेल्या या चळवळींची मुळे ही संपूर्ण देशभरात असून, ती आता नेपाळ, बांगलादेश, म्यानमार, पाकिस्तान व श्रीलंकेत पाय पसरत आहेत. नक्षलवादी विदेशातून शस्त्रास्त्रे मिळवत आहेत. (महाजन, २०१२). नक्षलवादी लोकशाहीतील सनदशीर प्रक्रियेवर विश्वास ठेवत नाहीत. भारतासमोर नक्षलवाद हेसुद्धा गंभीर आव्हान आहे.

उपाययोजना

लोकशाहीचा अधिकाधिक दुरुपयोग होण्याचे शक्यता असली तरीही लोकशाही टाळणे हा त्यावरचा उपाय नसून तिचा दुरुपयोग होण्याची संभाव्यता कमीतकमी करणे हा आहे. लोकशाही यशस्वी करण्यासाठी अनेक उपाययोजना राबविता येतील. त्यातील काही उपाययोजना पुढीलप्रमाणे स्पष्ट करता येतील.

१. खुल्या वातावरणात (मुक्त आणि न्याय्य) निवडणुका झाल्या पाहिजे. उच्चशिक्षित मतदारांची मतदानाविषयी उदासीनता कमी करून प्रत्येकालाच मतदान करणे सक्तीचे असावे. निवडणुकीत पैसे वाटप वगैरे प्रकार थांबविण्यासाठी कडक उपाययोजना राबवाव्या.
२. विविध संस्थांना आपापल्या कायदेशीर चौकटीत मोकळेपणे काम करण्यासाठी तसे वातावरण निर्माण करावे. तसेच लोकशाहीचे चारही स्तंभ सशक्त असले पाहिजेत.
३. डॉ. बाबासाहेब आंबेडकरांच्या मते आपण केवळ राजकीय लोकशाहीवर समाधान मानता कामा नये. राजकीय लोकशाहीबरोबरच आपण सामाजिक व आर्थिक लोकशाही निर्माण करावी.
४. विधिमंडळ किंवा संसदेत अविश्वासाचा किंवा विश्वासदर्शक प्रस्ताव काळात लोकप्रतिनिधींना त्यांची मते मांडण्याची पक्षविरहित मुभा असावी. व्हिप नावाचा प्रकार केवळ अविश्वास/विश्वासदर्शक प्रस्तावावरच असावा आणि अन्य बाबतीत सदस्याने पक्षविरोधी मत नोंदविले तरी ते सदस्य अपात्र ठरणार नाहीत. म्हणजेच ते पक्षाचा नव्हे तर लोकभावांचा आदर ठेवू शकतील.
५. व्यक्तिपूजा ही अधःपतन आणि अंतिमक हुकूमशाहीकडे नेणारा हमखास मार्ग ठरत असल्याने तो टाळावा.
६. राजकारण जर शुद्ध व्हायचे असेल तर प्रशासनात पारदर्शकता यायला पाहिजे. योजना लोकांपर्यंत पोचायला पाहिजे.



७. न्यायदान प्रक्रिया समाजातल्या शेवटच्या माणसाला न्यायाची हमी देणारी असावी.
८. गरिबी, निरक्षरता, कुपोषण अशा अनेक समस्या आजही कायम आहेत. ते कमी करण्यात अद्याप लक्षणीय यश आलेले नाही. त्यासाठी प्रयत्न होणे गरजेचे आहे.
९. लोकशाही यशस्वी करण्यासाठी विषमतारहित समाजव्यवस्था, विरोधी पक्षाचे अस्तित्व, कायद्यातील समता, संविधानात्मक नीतींचे कसोशीने करावयाचे पालन, अल्पसंख्यकांना सुरक्षितता, नीतीमान समाजव्यवस्थेची आवश्यकता आणि विवेकी व जागरूक लोकमत हे आवश्यक असणारे घटक आहेत.
१०. मतपेटीच्या राजकारणांमुळे जात व धर्माचा राजकारणात गौरवापर होतो. हा धोका टाळण्याचा एक जातीय उपाय म्हणजे निवडणुकीत विजयी होण्यासाठी उमेदवाराला अर्घ्यापेक्षा जास्त मते मिळविण्याची अट करणारा कायदा करणे गरजेचे आहे. प्रस्तावित बदलामुळे लोकशाही अधिक प्रातिनिधिक बनेल व उमेदवारांना त्यांच्या मतदारसंघातील सर्व घटकांचा पाठिंबा मिळवावा लागेल आणि जात, जमात किंवा धर्माच्या आधारे मते मागून आणि मिळवून भागणार नाही.
११. रस्ते, आरोग्य, शिक्षण, नवे तंत्रज्ञान या मूलभूत सुविधा त्या जनतेपर्यंत पोहोचवण्याची आवश्यकता आहे. मात्र ते आदिवासीपर्यंत पोहोचू न देण्याचे काम नक्षलवादी करत आहेत. ज्या प्रदेशांचा विकास झालेला नाही, रस्ते नाहीत, दळणवळणाची साधने नाहीत, अशा भागात नक्षलवाद्यांचा प्रभाव आहे. त्या भागाचा विकास करायचा असेल तर आधी पाणी, रस्ते, वीज इत्यादी पायाभूत सुविधा पुरवाव्या लागतील.

निष्कर्ष

स्वातंत्र्यानंतरच्या ७५ वर्षांत भारताने विविध क्षेत्रांत दीर्घमान कामगिरी केली असली तरी लोकशाहीसमोरील

अनेक आव्हाने आजही कायम आहेत. लोकशाही मूल्ये आणि संसदेसह इतर संस्थात्मक यंत्रणा यांचे मोठ्या प्रमाणात अवमूल्यन करण्यात आले. राज्यपाल, नियंत्रक व महालेखापरीक्षक, लोकसेवा आयोग, लोकायुक्त, केंद्रातील व राज्यांतील निवडणूक आयोग, वरिष्ठ सनदी सेवा, पोलीस व नियामक मंडळ या संस्थांना अनेक वर्षांपासून मुद्दाम व प्रयत्नपूर्वक कमी लेखून त्यांना कमकुवत बनविण्यात आले आहे. गरिबी, संप्रदायवाद, भ्रष्टाचार, वाढती झुंडशाही, अभिव्यक्ती स्वातंत्र्य, प्रसारमाध्यमांचे स्वातंत्र्य धोक्यात येणे, प्रांतवाद आणि लिंगाधारित भेदाभेद, त्यामुळे सामाजिक ऐक्यावर होत असलेले गंभीर परिणाम या काही प्रमुख आव्हानांचा यात प्रामुख्याने उल्लेख करावा लागेल. राजकारणातील गुन्हेगारी, राजकारणात जात, धर्माचा व पैशाचा वापर, प्रादेशिकवादाला खतपाणी, नक्षलवादाचे वाढते धैमान अशी अनेक आव्हाने आज लोकशाहीसमोर निर्माण झाली आहेत. आर्थिक विषमता, बेकारी, अज्ञान, धर्मांधता आणि जातीयता यामुळे सारा भारतीय समाज पोखरला गेला आहे.

लोकशाहीच्या चारही स्तंभांनी आत्मपरीक्षण करून जनतेची सार्वभौम सत्ता टिकविली पाहिजे. लोकशाहीमुळे संधी मिळालेल्या कोट्यवधी लोकांच्या जीवनात क्रांतिकारी परिवर्तन झाले. अजूनही कोट्यवधी गोरगरीब जनता न्यायाच्या प्रतीक्षेत आहे. हा न्याय प्राप्त करण्यासाठी नागरिकांनीच लोकशाहीस शक्ति दिली पाहिजे. लोकशाही सशक्त झाली तरच जनता सशक्त होईल. लोकशाहीची उभारणी लोकशाहीवर श्रद्धा असणाऱ्या जनतेच्या जागृत व संघटित शक्तीच्या आधारेच होईल. जनता लोकशाहीविषयी उदासीन असेल, तर लोकशाही धोक्यात आल्याशिवाय राहत नाही. जागृत मतदार हाच लोकशाहीचा आधार आहे. लोकशाहीचे रक्षण आपणच करू शकतो, याची जाणीव ठेवून मतदार राजाने सजगतेने मतदानाचे कर्तव्य निभावणे आवश्यक आहे.

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उत्कृष्ट संशोधन पेपर पुरस्कार तर्फे प्रा. बी.बी. पाटील (इस्लामपूर)

मानवविज्ञान विद्याशाखेतील सर्व विषयांच्या अभ्यासक, प्राध्यापकांचे 'विचारमंथन' रिसर्च जर्नलमध्ये पेपर प्रकाशित करण्यासाठी आपले स्वागत आहे. दरवर्षी 'विचारमंथन' मधील प्रकाशित झालेल्या रिसर्च पेपरमधील दोन उत्कृष्ट रिसर्च पेपर लिहिलेल्या प्राध्यापकांना प्रत्येकी ४,००० रुपयेचे पारितोषिक व सन्मान प्रमाणपत्र परिषदेमार्फत प्रदान करण्यात येईल.

तरी सर्व अभ्यासकांनी यास प्रतिसाद द्यावा ही विनंती.



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Research Article

Antimycotic activities of some novel antagonistic fungi against *Cercospora* sp.

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Abstract

The ten antagonists i.e. *Aspergillus niger*, *Aspergillus fumigatus*, *Aspergillus flavus*, *Trichoderma aviride*, *Trichoderma fuscum*, *Trichoderma harzianum*, *Trichoderma atroviride*, *Penicillium oxalicum*, *Trichoderma sp.*, *Verticillium lecaniae* were tested; Antagonists were isolated from groundnut rhizosphere the observation of different antagonists is narrated. The inhibitory effect of various antagonists against *Cercospora* sp. The inhibitory effect of ten tested antagonistic fungi were recorded in observation *Trichoderma aviride* (80%), *Trichoderma harzianum* (75%), *Trichoderma fuscum* and *Trichoderma atroviride* found highly effective On 3rd day of incubation against the treated pathogen *Cercospora* sp. while fungi like *Aspergillus fumigatus* (55.55) and *Penicillium oxalicum* showed less growth inhibition. The remaining tested antagonists comparatively weak in controlling the mycelial growth of pathogen. All the tested antagonistic fungi were found to be 100 per cent effective against the *Cercospora* sp. 7th day of incubation except *Penicillium oxalicum* (96.57).

INTRODUCTION

Fungi in the genus *Cercospora* are among the most prevalent and destructive plant pathogens. As a group, they are nearly universally pathogenic, occurring on a wide range of hosts in almost all major families of dicots, most monocot families, and even some gymnosperms and ferns (Pollack F. G. 1987). Groundnut (*Arachis hypogaea* L.) belongs to genus *Arachis* in the sub tribe *Stylocanthinae* of tribe *Aeschynomeneae* of the family *Leguminosae* having origin from South America (Naidu *et al.*, 2006). It is the most important summer, Rain and, winter season cash crop as well as oil seed crop in the world (Mensah and Obadomi, 2007).

Groundnut seed has high protein (25-28%) and oil content (43-55%) (Naeem *et al.*, 2009). Integrated factors affect the groundnut yield i.e. *Cercospora*

leaf spot attributable to *Cercospora arachidicola* S. Hori (Early leaf spot) and *Cercosporidium personatum* (Late leaf spot). These wide spread and most drastic foliar diseases cause severe losses in crop (Ijaz *et al.*, 2008). infect groundnut crop directly and indirectly and causes huge losses up to 25-43% as defoliation of the leaves due to photosynthesis process is disrupted and plant produce pods lesser and inferior in quality (Waliyar *et al.*, 2000). Losses are even more when crop is unsprayed (Anonymus, 2000). Mostly Infection and disease development starts from irregular rains during flowering to pods formation. The maximum and minimum temperature ranges for CLS is 31 degree Celsius - to 35 degree Celsius and 18 degree Celsius - to 23 degree Celsius, respectively (Pande *et al.*, 2000).

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Biocontrol is modern techniques in agriculture sector; it does not have side effect and it is ecofriendly technique it not produces any hazardous material. It is eco-friendly managements of pathogenic microorganism. The antagonistic fungi it has a potential to restrict other fungi and arrest of pathogen achieved by way of antibiosis.

Therefore, their eco-friendly cost effective management is need of today and the management of diseases of vegetable crops by using biocontrol methods is certainly an inspiring and valuable approach.

The control of these types of pathogen remains a challenge and still base upon multiple applications of fungicides. Chemical control is effective and efficient but, at the same time, can leads to the development of pathogen resistance, chemical residues in fruit, phytotoxicity to other organisms or environmental and public health problems (Adebayo *et al.*, 2013). In order to minimize these factors and to comply with food safety standards, there is an increased interest for bio-ecology studies of this pathogen and a worldwide trend to explore new alternatives to synthetic fungicides (Tatiana Eugenia Sesanet *et al.*, 2015). Specific bacterial and fungal antagonists of the rhizosphere can induce this systemic effect in plants (Brisson *et al.*, 2015). There is little investment in the research development of fungal biological control agents compared with that spent on the discovery of chemical pesticides. Two reasons for this is the mycoparasites usually have narrow host range and because they have given inconsistent or poor control in field trials. This has led to a greater emphasis on the search for broader spectrum bio pesticides with improvements in the associated production, formulation and application technologies.

MATERIAL AND METHODS

Collection of different antagonists

Different antagonists were collected and isolated from soil samples of ground nuts crops. Antagonistic fungi were isolated by serial dilution agar plating method. Rhizosphere fungi were used for antagonistic analysis. The ten fungi selected for evaluation of its antagonistic properties were- *Aspergillusniger*, *Aspergillus fumigatus*, *Aspergillus flavus*, *Trichoderma aviride*, *Trichoderma fuscum*, *Trichoderma harzianum*, *Trichoderma atroviride*, *Penicillium oxalicum*, *Trichoderma sp.*, *Verticillium lecanae* All these antagonists were isolated from rhizosphere soil samples ground nuts

Collection and isolation of fungal pathogens

In the present investigation, *Cercospora sp. foliar* pathogenic fungi of ground nuts were selected for antagonistic analysis. PDA medium were selected.

Antagonistic analysis

To see the antagonism against different pathogens dual culture method was adopted. Autoclaved medium was poured into the glass petriplate and was allowed to solidify. The 5 mm discs of antagonist from the stored culture were cut using a sterile cork borer under aseptic conditions. In the Petri, plate of solidified medium a disc of pathogen kept in the center and three discs of antagonistic fungi were placed at equidistant from the center. Control plate containing only pathogen was also maintained. The radial mycelia growth of pathogen and antagonists were measured for every 24 hours up to seven days and inhibition per cent was calculated on 3rd, 5th and 7th day. The per cent inhibition by antagonistic fungi was calculated using the following formula.

$$\frac{TFC - TFr}{TFC} \times 100$$

Per cent inhibition = ----- X 100

TFC

TFC- Test fungus in control

TFr- Test fungus in treatment.

RESULTS AND DISCUSSION:

Cercospora sp. is a common plant pathogen of various economically important plant which causes the serious leaf diseases. The inhibitory effect of ten tested antagonistic fungi were recorded in observation table 1. From the observation table 1 it

is clear that, *Trichoderma viride* (80%), *Trichoderma harzianum* (75%), *Trichoderma fuscum* and *Trichoderma atroviride* found highly effective. On 3rd day of incubation against the treated pathogen *Rhizoctonia solani* while fungi like *Aspergillus fumigatus* (55.55) and *Penicillium*



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oxalicum showed less growth inhibition. The remaining tested antagonists comparatively weak in controlling the mycelial growth of pathogen. All the tested antagonistic fungi were found to be 100 per cent effective against the *Cercospora sp.* 7th day of incubation except *Penicillium oxalicum* (96.57).

Table 1.: Effect of different antagonists on radial mycelial growth of *Cercospora sp.*

Sr. No.	Antagonistic fungi	Radial mycelial growth (mm)*			% growth inhibition		
		3DAI	5DAI	7DAI	3DAI	5DAI	7DAI
1	<i>Aspergillus niger</i>	16.00	32.00	0.00	20.00	62.35	100.00
2	<i>Aspergillus fumigatus</i>	09.00	45.00	6.00	55.00	47.05	92.94
3	<i>Aspergillus flavus</i>	13.00	70.00	0.00	35.00	17.64	100.00
4	<i>Trichoderma viride</i>	04.00	30.00	0.00	80.00	58.82	100.00
5	<i>Trichoderma fuscum</i>	06.00	16.00	0.00	70.00	81.17	100.00
6	<i>Trichoderma harzianum</i>	05.00	36.00	0.00	75.00	57.64	100.00
7	<i>Trichoderma atroviride</i>	06.00	29.00	0.00	70.00	65.88	100.00
8	<i>Penicillium oxalicum</i>	09.00	60.00	3.00	55.00	29.41	96.47
9	<i>Trichoderma sp.</i>	13.00	24.00	0.00	35.00	71.76	100.00
10	<i>Verticillium lecaniae</i>	11.00	65.00	0.00	45.00	23.52	100.00
11	Control	20.00	85.00	85.00	-	-	-

Antagonistic ability of ten non-pathogenic rhizospheric fungi were screened against fifteen pathogenic fungi of four experimented ground nuts plants. The non-pathogenic fungi of ground nuts were undertaken for this study as antagonists are as follows. *Aspergillus niger*, *Aspergillus fumigatus*, *Aspergillus flavus*, *Trichoderma atroviride*, *Trichoderma fuscum*, *Trichoderma harzianum*, *Trichoderma atroviride*, *Penicillium oxalicum*, *Trichoderma sp.*, *Verticillium lecaniae*. In present research work antagonistic effect of different antagonists were assessed by dual culture method and radial mycelial growth of pathogen were measured on 3rd, 5th and 7th day after incubation. The per cent growth inhibitions were calculated by standard formula.

From the observations and results it was calculated that among all antagonists tested for its antagonistic efficiency against the pathogenic fungi of ground nuts, it was found that the various species of ubiquitous soil fungi *Trichoderma* such as *Trichoderma atroviride*, *Trichoderma fuscum*,

Trichoderma harzianum, *Trichoderma atroviride* and *Trichoderma sp.* reported effective against almost all pathogens from 3rd day of incubation. *Trichoderma harzianum* and *Trichoderma viride* found to be highly effective in controlling the radial mycelial growth of pathogen since 3rd day of incubation in dual culture technique. Among various species of *Trichoderma*, *Trichoderma fuscum*, *Trichoderma atroviride* and *Trichoderma sp.* found to be less effective as compared to efficient antagonists *Trichoderma harzianum* and *Trichoderma atroviride* (Parbhankar and Mogle, 2017; Mane and Mogle, 2010). The few species of *Aspergillus* such as *Aspergillus niger*, *Aspergillus fumigatus*, *Aspergillus flavus* which have been tested shows less antagonistic efficiency as compare to *Trichoderma*. Among the *Aspergillus*, *Aspergillus flavus* found highly effective followed by *Aspergillus niger* and *Aspergillus fumigatus*. *Verticillium lecaniae* recorded highly effective against *Curvularia lunata*.

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- Helminthosporium* sp. and two species of *Alternaria* i.e. *Alternaria porri* and *Alternaria* sp. The present antagonistic analysis study clearly indicates that *Penicillium oxalicum* found to be the less effective as it fails to inhibit the radial mycelial growth of any pathogen as compared to all tested antagonists. Maximum mycelial growth of pathogen was recorded in control, in which only pathogen was incubated.
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Effects of Chemical Pesticides on Human Health and Environment

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Abstract : Pesticides are chemicals used to control pests and increase crop production, but they can have negative effects on human health and the environment. Pesticide exposure can lead to acute poisoning, chronic health effects, birth defects, respiratory problems, and skin irritation in humans. Pesticides can also contaminate soil and water, harm non-target organisms, reduce biodiversity, and contribute to the development of pest resistance and outbreaks. It is crucial to use pesticides responsibly and follow safety precautions to minimize their adverse effects on human health and the environment. So we studied about the commonly used pesticides by farmers and their harmful effects on human body and biodiversity.

Index Terms – Pesticides, environment, health hazards.

I. INTRODUCTION

To meet the growing demand for food, pesticides are extensively used in agriculture to protect crops from pests. While the availability of safe and effective pesticides and their responsible use by farmers are crucial for the long-term sustainability of agriculture, pesticides pose a significant threat to the Sustainable development goals due to their potential adverse effects on non-target species and the environment. Exposure to pesticides has been linked to various health impacts on humans, such as cancers, neurological, immunological, and reproductive effects. Pesticides can also contaminate soil and water, reduce biodiversity, and contribute to pest resistance and outbreaks. The future of Indian farming is hazardous. Hazardous chemicals have begun getting into underground water supplies as a result of overuse of pesticides. Therefore, it is most important to understand the quantity of pesticide use and precautions to be taken to minimize their harmful effects on human health and environment.

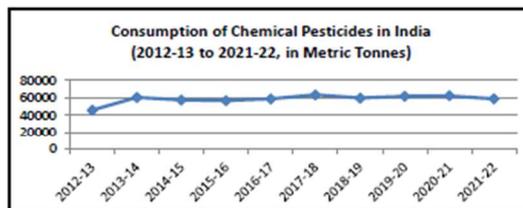
In India, a lot of people work in agriculture because it's an important part of the country's economy. India is one of the top countries in the world when it comes to making and using pesticides. Many years ago, there was something called the Green Revolution that helped India use a lot more pesticides. But now, the country is using less pesticide because some of them are banned and farmers are using better ways to control pests. Even though the use of pesticides has gone down, the country still uses a lot of them. Some states in



India use more pesticides than others, like Maharashtra and Uttar Pradesh. These two states use about 40% of all the pesticides used in the country each year. Punjab is another state that uses a lot of pesticides. Using so many pesticides is not good for the environment and people's health. To address these issues, the Indian government has implemented various policies and programs to reduce the use of harmful pesticides and promote safer and sustainable pest management practices. For instance, the government has banned the use of certain types of pesticides, such as endosulfan and monocrotophos, which have been linked to severe health impacts. The government has also introduced the Integrated Pest Management (IPM) program, which aims to reduce the reliance on pesticides and promote the use of alternative pest control methods, such as biological control and crop rotation.

Many pesticides have been linked to health and environmental problems (1, 2, 3-8), and several pesticides are no longer used in agriculture (2). Pesticide exposure can occur through ingestion, inhalation, or skin contact with the substance. The type of pesticide, the length of exposure, the method of exposure, and the individual health status (such as dietary deficits and the condition of one's skin, for example) all affect the potential health outcome. The agricultural workers and the family members of pesticide applicators are most at danger.

Pesticides may be metabolized, expelled, stored, or bioaccumulated in body fat within a human or animal body (1, 2, 9). A wide range of common foods and drinks, such as cooked meals, water, wine, fruit juices, snacks, and animal feeds, might include pesticide residues (10-17). Only 0.1% of pesticides are estimated to affect the target entity, with the remainder contaminating the environment (18). Most farmers are unaware of the types of pesticides, their levels of poisoning, safety precautions, and the risks they pose to human health and the environment. A significant issue in society is the impact of agricultural pesticides on organisms that are not their intended targets. Several studies have looked at how pesticide exposure affects a variety of health issues, particularly the risk of cancer. This objective of this work is to examine the effects of commonly used pesticides in agriculture and their effect on human health and environment.



Source- Directorate of Plant Protection Quarantine Storage

In addition to direct effect on human health and environment accidents are another threat caused by improper handling of these chemical pesticides. According to NCRB report, around 8000 cases of unintentional ingestion of insecticides/pesticides occurred in 2021 alone, which led to the deaths of 7800 people in India (19). Pesticides are also related to other problems, such as farmer suicides and corporate monopolies. Many research commonly link pesticide exposure to negative health outcomes. Children are the most sensitive category due to their small body mass and age-related potential pesticide exposure risk. Cancer risk has been linked favorably to children's direct contact with pesticides (20). Several epidemiological studies



also demonstrate a link between parental pesticide exposure and the relative risks of childhood cancer (21-22). According to a study that compared pesticide data with medical records, pregnant women who live nine miles from farms where pesticides are sprayed have a higher risk of losing an unborn child to birth abnormalities (23). Parallel to these findings, we discovered a strong correlation between the mortality rate for children under the age of five and pesticides, especially insecticides and other pesticides. According to reports, there is a direct correlation between the use of insecticides and herbicides and asthma diagnoses made before the age of five (24).

Material & Method

Information regarding most common pesticides used by farmer was collected from fertilizers and pesticide stores. We have found 28 pesticides are more commonly used by farmers out of which some are insecticides and fungicides which are Acetamiprid (20%), Azoxystrobin (11%) + Tebuconazole (18.3%), Biphenthrin, Carbendazin (50%), Chlorantraniliprole (18.5%), Clothianidin (50%), Cyantraniliprole 10.26%, Diafenthiuron (50%), Dimethoate, Emamectin Benzoate(95%), Emiamectin benzoate (5%), Ethion technical (54.5%) Fenoxoprop (9.3%), Fipronil (18.87%), Fipromil (5%), Fluopyram (17.7%) + Tebuconazole (17.7%) Hexaconazole, Imazethopyr (35%) + Imazomox (35%), Imidacloprid (17.80%), Lambdacyhalothrin (5%) Monocrotophos (36%), Potassium Phosphate, Profenofos (40%) + Cypermethrin (4%), Propiconazole (25%), Propineb, Spirotetramat (11.01%), Imidacloprid (11.01%), Tebuconazole(50%) + trifloxystrobin (25%), Thiamethoxam (25%), Thiamethoxam(12.6%) + Lambdacyhalothrin (9.5%), Triazophos (60%). We studied the effects of these pesticides and fungicides on human health and environment.

Result & Discussion

Some of the common effects of pesticides on human health:

1. Acute Poisoning: Pesticides can cause acute poisoning, which can lead to symptoms such as nausea, vomiting, diarrhea, headaches, dizziness, and even death.
2. Chronic Health Effects: Long-term exposure to pesticides can lead to chronic health effects such as cancer, reproductive and developmental disorders, neurological disorders, and endocrine disruption.
3. Birth Defects: Pesticide exposure during pregnancy can increase the risk of birth defects in newborns.
4. Respiratory Problems: Pesticide exposure can cause respiratory problems such as asthma, chronic bronchitis, and chronic obstructive pulmonary disease (COPD).
5. Skin Irritation: Pesticides can cause skin irritation and allergic reactions in some people.

Some of the effects of pesticides on the environment:

1. Soil Contamination: Pesticides can contaminate soil, which can affect the health of plants and animals.
2. Water Pollution: Pesticides can enter the water supply through runoff and can contaminate rivers, lakes, and groundwater, which can affect the health of aquatic life and wildlife.
3. Loss of Biodiversity: Pesticides can harm non-target organisms, including beneficial insects, birds, and mammals, which can lead to a loss of biodiversity.



4. Resistance: Repeated use of pesticides can lead to the development of resistance in pests, which can make the pesticides less effective over time.
5. Pest Outbreaks: Pesticides can kill off beneficial insects and predators that naturally control pests, which can lead to pest outbreaks and the need for more pesticides.

It was found that most of pesticides and fungicides do not have any chronic effect in short term but may cause skin irritation, allergic reactions, eye irritation, and if inhaled may cause respiratory problems. Some pesticides like Carbendazin (50%) Cyantroniliprole (10.26%), Ethion technical (54.5%), Fipronil (18.87%), Lambdacyhalothrin (5%), Monocrotophos (36%), Profenofos (40%) + Cypermethrin(4%), Propiconazole (25%), Propineb may cause serious damage to health by prolonged exposure through inhalation and if swallowed and may cause damage to organs through prolonged or repeated exposure. Spirotetramat (11.01%) + Imidacloprid (11.01%) insecticide and Tebuconazole(50%) + trifloxystrobin (25%) fungicide Suspected of damaging fertility or the unborn child, may cause harm to breast-feed children. Monocrotophos (36%) is banned for use on vegetables due to its harmful effects on health. Triazophos (60%) is banned from August 2018. The use of Triazophos is completely banned with effect from the 31st December, 2020 but it was commonly used by farmers before it was banned. Thus like the harmful effects of pesticides and fungicides on human health they also have adverse effect on environment and biodiversity. Most of insecticides and fungicides are very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment like Carbendazin (50%), Chlorantraniliprole (18.5%), Clothianidin (50%), Cyantroniliprole (10.26%), Diafenthiuron (50%), Emamectin Benzoate(95%), Fenoxoprop(9.3%), Fipronil (18.87%), Fluopyram (17.7%) + Tebuconazole (17.7%), Hexaconazole, Lambdacyhalothrin (5%), Monocrotophos(36%), Profenofos (40%) + Cypermethrin(4%), Propiconazole (25%), Propineb, Spirotetramat (11.01%) imidacloprid (11.01%), Tebuconazole (50%) + trifloxystrobin (25%), Thiamethoxam (25%), Thiamethoxam(12.6%) + Lambdacyhalothrin (9.5%), Triazophos (60%). Some pesticides are harmful to bees like Dimethoate, Emamectin Benzoate(95%), Fipronil (18.87%) , Imidacloprid (17.80%), Thiamethoxam (25%), Triazophos (60%).

Conclusion

The use of chemical pesticides is increasing over the years, the usage of pesticides should be reduced by the implementation of measures like biological pest management and good farming practices. Despite the fact that pesticides are designed to avoid, get rid of, or control hazardous pests, numerous studies have raised questions about the dangers that pesticides pose to the environment and human health. From this it was observed that many pesticides on long term exposure may cause chronic diseases to farmers and their family members and the peoples who are in regular contact with these pesticides. So through educational programmes, farmers should be made aware of misuse, negligent use of non-purpose thread or application errors, such as the wearing of protective clothing during application, adherence to personal hygiene rules, excessive use and unnecessary duplication, exposure to chemicals, and contact with them. Most of the pesticides were harmful to aquatic plants and animals hence should not be used near water bodies, aquaculture



or pisciculture. Some pesticides were harmful to bees so avoid using them in flowering season. Additionally, policymakers can promote policies that incentivize sustainable agriculture and reduce the use of harmful pesticides. By doing so, we can ensure that agriculture remains a sustainable and healthy sector in India for years to come. Overall, it is important to use pesticides responsibly and follow all safety precautions to minimize their negative effects on human health and the environment.

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RECENT TRENDS IN CONTEMPORARY LITERATURE

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ABSTRACT:

In this paper, the researcher has discussed recent trends in contemporary English Literature. There are many trends which have emerged already like micro fiction, flash fiction, six words novels, Twitter fiction, and graphic novels. Because of the Internet, everything is available online. There is no time for people to pause and read lengthy novels when shorter versions are available online. The writers find it difficult to hold the attention of the new generation. Because of social media literary works can be reviewed, and individuals may discuss various issues. So, the researcher in this paper aims to examine the current trends of contemporary literature and its significant role in this modern age. Current trends like '6-word novel', blogs and hypertext are more popularized. This study has deduced that literature has been revolutionized as a result of globalization and the internet which is a strong relationship between literature and societal influence.

Keywords: Literature, Internet, Trends, exchange of ideas and Social Media.

Literature is the way that writers can communicate with their readers and contemporary literature is the literature that is being created in the present about the situations at present which reflects the social and political uproar in society, and socioeconomic conditions in the world. Society changes with time, and so do messages and the content of contemporary literature. It reflects the social and political viewpoints of society and the strengths and weaknesses of society. It is significant to understand how people are viewing the world and their reactions to the present society.

Literature changes at a more rapid pace today than ever before because of the innumerable political, social, ecological, cultural and technological changes happening in the world. These changes are responsible to change our perspective as well. Gone are the days when research scholars, students and teachers are thought to be specialised in the Victorian age and early ages. The study of English literature itself has shifted from the study of individual writers to the trends and movements they represent to the message of the time

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they convey. As we all know globalisation and the communication revolution have transformed literature and so we can see various trends in literature. Writers are influenced by the evolution of literature and they contribute to the various new trends in literature. Thus, this study aims to examine the current trends in contemporary literature.

A trend in literature refers to something that an author observes, like ideologies, forms, themes, and expressions, similar to the general course or the popular idea in the period they are writing. For example, in recent times, some of the popular contemporary trends in literature that have been much-admired are science fiction, fantasy, romance, historical, paranormal, etc. A few famous examples of contemporary classic literature are Tanya Thompson's Red Russia, The Kite Runner by Hosseini, Life of Pi by Martel, Cormac McCarthy's The Road, A Thousand Splendid Suns by Hosseini, Never Let Me Go by Kazuo Ishiguro, Atwood's The Handmaid's Tale and Atonement by Ian McEwan. The indispensable themes of these books are racism, income inequality, effects of globalization, social hierarchy, identity, history and memory, technology, intertextuality etc.

As we all know, with the rise in digital technology much traditional literature has been converted into digital databases so that they are easily accessible. The current technological transformation includes the use of accessible smartphones, tablets, internet-connectable devices, on-demand television and cable services, artificial intelligence, algorithmic marketing and many more novel inventions. As a result, micro literature is created to cope with the twisting attention span of the readers. Flash fiction and micro-fiction are some products of the internet age only. Moreover, there are the days of 6 words stories and there are twirlers instead of thrillers, and mysteries instead of short stories. The changing phase of literature is hard to trace as it is determined by the uncontrollable factors dictated by technology. Today people have no space and time for Thomas Hardy-style descriptions of nature or Charles Dickens-style descriptions of characters rooted in the local scene. Modernists had already broken the barriers of rhyme and nature but post-modernists are breaking the national, cultural and linguistic barriers. At present for universal appeal, we need all genres of writing to demand higher standards in terms of insight and character study. There are many other shades of change across the literature world which are more advance and difficult to comprehend and capture. For instance, post-modernism had a significant influence on English literature after the second world war. We can see multiple cultural influences in writing. Structuralism has played a crucial role in popularising liberal styles in content, forms and diction. Classics and epics are revised and reinterpreted to suit the modern sensitivity of the readers. Today literature reinters to the widening closet identity gender, the politics of belonging travel tragedies, feminism, ecocriticism, post-humanism, animal studies etc. Today gender concerns are more considered voices from former colonies after independence. Other important concerns are post-colonisation Indian English literature, Black literature translations of regional work, Dalit literature, the autobiography of Dalit literature etc. Today poetry is not the chief medium of writing.

Recently eBook Technology, digitization, blogging audio recording versions and other forms of social networking are playing a crucial role in the evolution of literature. Readers can discuss issues on social media. These platforms have brought extensive change in ideas and the exchange of ideas. The access to literary work has increased. Social media is

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inhibiting the development of arts and literature that suits the genres of the writers. On the whole English literature has become richer and richer. There are new forms of writing such as Celebrity-authored fiction, Books about the Ukraine War, Greek Myths, Women's Stories, eBooks, audiobooks and self-publishing books etc.

Celebrity writing, from Katie Price to Tyra Banks – is an evergreen trend. These are stories about actors, athletes, comedians, historical figures, musicians, newsworthy people, and reality show contestants among others and also fiction about the fans. For example, Joining Osman and Coles in the cosy crime genre Strictly comes Dancing judge Shirley Ballas, who signed with HQ to write two novels with Sheila McClure. Meanwhile, musical theatre's Michael Ball is publishing a fiction series that charts the stories of two families through the 20th century, via their links to British theatre. Then there are books about the Ukraine war. Unsurprisingly, people are on the lookout for things that will help them understand Ukrainian/Russian relations. The president of the Ukrainian Publishers and Booksellers Association, Oleksandr Afonin, pre-recorded a video for the fair, in which he urged companies to support Ukrainian publishers by donating paper and money, as well as by buying rights to publish Ukrainian authors.

Readers' appetites for new versions of popular – and obscure – tales from Greek and Roman times are limitless, with books from Madeline Miller's *Circe* to Kamila Shamsie's *Home Fire* being both commercial and critical successes. The latest author to join the argument is *Life of Pi*'s Yann Martel. The Booker prize winner book *Son of Nobody*, a retelling of the Trojan war with a "modern twist". It reveals the story of an unsung hero, Psoas of Midea, the son of a goatherd, a commoner who leaves his wife and children behind to help Menelaus get his beautiful wife back.

Then there is young adult fiction which is related to education and science. In addition, genres like friendship, environmental preservation, self-esteem, self-reliance, and social justice are also there. Nonfiction genres like cookbooks for self-development and inspiration to business management, children's books, politics, memoirs and autobiographies, business and economics, self-help, and philosophy. Authors of Children's books write stories representing children from all walks of life, caste, and community. As Storytelling provides an opportunity to interact with the younger generation and especially parents prefer it. Novels that feature distinguishing characters, subjects, and marginalized or black voices. There is a significant demand for novels and books featuring political affairs, such as stories from Ukraine, written by authors who actively record such events, question them, and comment on them. With so many things happening around the world, this trend will continue through 2024. There are also several novels about women in dark and desperate situations, perhaps reflecting current discussions about women's health and safety. For instance Madeline Miller's book *The Songs of Achilles*. The Nursery by literary agent Szilvia Molnar is about a woman who begins to lose her grip on time after giving birth, while Christina Dalcher's *Vita* is a high-concept thriller about a world in which a prosecutor's life is forfeit if they seek the death penalty for someone who turns out to be innocent. In historical fiction, *The Witching Tide* by Margaret Meyer is inspired by true events in 1645, following a woman who becomes witness to a witch hunt. *The Beholders*, by Hester Musson, is about a young maid in the 1870s who finds herself trying to uncover the mysteries of her workplace. Then there are also Self-help books, which are

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taking on new relevance. While self-publishing a book has been on the rise since 2010, the pandemic and the popularity of eBooks pushed the trend even further. Last year, half of the new book titles that appeared were self-published. These books help readers to offset the anxieties of modern life – from the soaring cost of living to the climate crisis. Writat is a great self-publishing platform for authors looking for a ludicrously easy and lucrative way to publish their writeups. The book publishing platform supports over 15 world languages, 10+ genres, and all three book formats. They have an inbuilt manuscript template for each genre, 500+ free book cover designs, four different publishing packages, and six standalone solutions for authors. In 2022, 200+ authors from around the world registered on Writat and successfully published their books. Wintering author Katherine May's *Enchantment: Reawakening Wonder in an Anxious Age*, which is about nourishment through reconnection, and *The Greatest Self Help Book (Is the One Written by You)* by author Vex King and his wife, beauty influencer Kaushal Modha, which includes six months of prompts to help readers forge their paths towards self-love. With the evolution of self-publishing platforms like Writat, which offers end-to-end publishing solutions, it is getting easier for writers to create and publish digital books.

Over the last 10 years, the demand for eBooks has skyrocketed. eBooks outperformed all other book formats. Audiobooks and eBooks are going to be the biggest action masters of the book publishing industry in 2023. Then there is Book Tok to create short informational videos about our book. The online book club is filled with enthusiastic and passionate young readers which gives the book the desired exposure. The demand for diversity, strong opinions, and cultural representation has grown stronger over the past few years. And self-publishing platforms and traditional publishing houses are working hard to find authors who have diverse voices and writeups. Blinkist is also one of the recent trends. It is the leading book summary platform, with over 18 million users already. The platform artistically summarizes non-fiction book content into simple audio and text summaries for readers that fit their reading habits and schedules. It is also called Blinks. Many book publishers and authors are resorting to Artificial Intelligence to write articles and non-fiction books. Writers have adapted to changing conditions.

Conclusion:

With the commencement of every new era, literature styles change, giving rise to a new trend. Many traditional kinds of literature are now accessible through online platforms and form a base of modern-day literature. New trends are replacing linear, solitary and closed reading with the internet, causing a transformation in the way literature is written, perceived and read. There is a wide spread of information available some of which is balanced literature while others are biased and linked to virtual or mass media. Literary works can be reviewed easily and readers can discuss issues on social media. These platforms have brought an extensive exchange of ideas and access to literary works exchange of ideas. Earlier studies required more effort and time but now it is easier because of the internet. However, there are some negative points also of these trends especially, social media inhabiting the development of arts and literature that suits the genius of the writer. On the whole, English literature has become richer and richer.

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Diversity of Fresh Water Fishes from the Khadkurna Reservoir of Maharashtra, India

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Abstract

Fish is a significant source of nourishment for mankind. The primary goal of the study is to understand the area's fisheries potential and edible wild fishes. The information gleaned from the current study is valuable in a number of other ways, too, such as helping researchers and fishermen alike understand the tolerance and diversity of fish found in the Khadkurna Reservoir and selecting the precise mix of fish species for culture in order to maximise yield. Six different sites were chosen for fish collection, all of which are regularly used for fish farming by farmer societies. Present study finds 22 species of fishes belonging to 06 orders, 11 families and 19 genera from the study area. Cypriniformes like the *Labeo rohita*, *Catla catla*, *Cirrhinus mrigala*, *Cyprinus carpio*, *Labeo doggut*, *Garra mullya*, and *Puntius sophore* Most prevalent species included *Cirrhinus reba*, *Rasbora daniconius* (Hamilton) *Crossocheilus stictus* Hamilton), and *Salmostoma* sp. This paper discusses the diversity of the aforementioned species in detail.

Keywords: Fish Diversity; Fresh Water; Khadkurna; Maharashtra; India

Introduction

Biodiversity and the environment that it supports are gifts from nature that are essential to the continuation of life as we know it. The diversity and variability of plants, animals, and microorganisms within an ecosystem is known as biodiversity. Ichthyodiversity is the diversity of fish species; depending on the setting and scale, it may also refer to alleles or genotypes within a population of fish, species within a fish community, and species across aquaregimes [1]. India is blessed with a sizable area of undeveloped inland water. The resources of fresh water are extremely valuable to the life on our planet. In the past few years, there have been a lot more dams, reservoirs, tanks, etc. The aquatic ecosystem is crucial, and

it is home to many economically significant creatures, particularly fish, which are a significant source of food.

The majority of vertebrates on earth are fish, which makes up nearly half of all vertebrates. They exist in almost every type of aquatic environment. They have a huge range in terms of size, shape, biology, and the habitats they live in. [2] estimated that there are 21,723 extant fish species worldwide, divided among 4,044 genera, 445 families, and 50 Orders, as opposed to 21,450 extant tetrapods, out of the 39,900 species of vertebrates in the world. 8,411 of these are freshwater species, and 11,650 are marine species. [22] described 1418 fish species from 342 genera in British India.

Citation: Nagmote SR, et al. "Diversity of Fresh Water Fishes from the Khadkurna Reservoir of Maharashtra, India". *Acta Scientific Microbiology* 6.4 (2023): 92-97.



Diversity of Fresh Water Fishes from the Khadkurna Reservoir of Maharashtra, India

Maharashtra has a variety of fish species and a wealth of freshwater reservoirs, including rivers, irrigation canals, dams, and lakes. Maharashtra is a significant state for producing fish and for its natural water resources, and it offers great potential for developing its fisheries. A large number of researchers have extensively studied the fish diversity, including [3-16].

Because of constant anthropogenic stress, fish diversity is declining quickly every day. In addition to adding to the wealth of our planet, diversity has a significant impact on fisheries. Therefore, there is a pressing need for thorough research into and documentation of fish diversity in order to create an information system on freshwater fish diversity that includes both bioinformatics and geo-referenced databases of fish and fish habitat. Despite the fact that the Khadkurna Reservoir has undergone extensive surveys, none of them have provided a separate list of the fish species found in the current study area. The current study makes an effort to catalogue the variety of freshwater fishes found in the Khadkurna Reservoir of Maharashtra.

Materials and Methods

Study area

Khadkurna is one of the three major dams of the Buldana district (Latitude: 20° 4' 10.79" N, Longitude: 76° 10' 4.73" E, Altitude: 445 meters above sea level) with storage capacity of 160.66 m cm water, has registered 276 mm rainfall in its catchment area. Khadkurna Reservoir which rises from Gautala forest and upon which the dam lies, is now receiving good amount of water.

Collection of fish samples

Fish samples were collected for the current study from Khadkurna Reservoir and neighbourhood fish markets.

Identification of fish sample

Fish from dams were collected using a variety of fishing techniques, according to section 3.3 of the report. Following sampling, fish samples were preserved in 10% formalin for close examination and identification using the standard literature of [19-21]. Some of the samples were sent to Western Regional Office of Zoological Survey of India for further identification.

Results, Discussion and Conclusion

The Khadkurna Reservoir is home to 22 species of freshwater fish that are represented by six orders, eleven families, and 19 genera in the current study. The table below shows the freshwater fishes identified during the current study.

Sr. No.	Order	Family	Fish Species
1	Cypriniformes	Cyprinidae	<i>Labeo rohita</i> (Hamilton-Bachanan 1822)
2	Cypriniformes	Cyprinidae	<i>Catla catla</i> (Thun-gran 1966)
3	Cypriniformes	Cyprinidae	<i>Cirrhinus mrigala</i> (Hamilton Bachanan, 1822)
4	Cypriniformes	Cyprinidae	<i>Cyprinus carpio</i> (Linnaeus 1758)
5	Cypriniformes	Cyprinidae	<i>Labeo boggut</i> (Sykes 1838)
6	Cypriniformes	Cyprinidae	<i>Garra mulliya</i> (Sykes 1841)
7	Cypriniformes	Cyprinidae	<i>Puntius sophore</i> (Hamilton Bachanan, 1822)
8	Cypriniformes	Cyprinidae	<i>Cirrhinus reba</i> (Hamilton Bachanan 1822)
9	Siluriformes	Siluridae	<i>Ompok bimaculatus</i> (Lacepede 1803)
10	Siluriformes	Bagridae	<i>Mystus bleekeri</i> (Day)
11	Siluriformes	Bagridae	<i>Mystus cavasius</i> (Hamilton Bachanan 1822)
12	Siluriformes	Siluridae	<i>Wallago attu</i>
13	Perciformes	Cichlidae	<i>Tilapia mosombi-ca</i> (W.K.H pterus 1852)
14	Perciforme	Gobiidae	<i>Glossogobius giurti</i> (Hamilton-Bachanan 1822)
15	Synbranchiformes	Mastocembelidae	<i>Mastocemelus armatus</i> (Scopoli 1777)
16	Osteoglossiformes	Notopteridae	<i>Notopterus notopterus</i> (pallas 1769)
17	Cypriniformes	Cyprinidae	<i>Rasbora daniconius</i> (Hamilton)
18	Cypriniformes	Cyprinidae	<i>Crossocheilus latius</i> (Hamilton)
19	Anguilliformes	Anguillidae	<i>Anguilla bengalensis</i> (Gray)
20	Perciformes	Channidae	<i>Channa striata</i> (Bloch)
21	Cypriniformes	Cyprinidae	<i>Salmostoma</i> sp.
22	Perciformes	Ambassidae	<i>Chanda nama</i> (Hamilton)

Table 1: List of fresh water fishes from the Khadkurna Reservoir.

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Sr. no	Species (Binomial name)	Vernacular/Local name	Economic Status	Site of Collection	Conservation Status (IUCN 3.1)
1	<i>Labeo rohita</i> (Hamilton-Buchanan 1822)	Rohu	High	Ekburji damp	Least concern
2	<i>Catla catla</i> (Jhingran 1966)	Catla	High	Tornala damp	Least concern
3	<i>Cirrhinus mrigala</i> (Hamilton-Bachanan 1822)	Mrigal	High	Supkhela damp	Vulnerable
4	<i>Cyprinus carpio</i> (Linnaeus 1758)	Gowri	High	Tornala damp	Vulnerable
5	<i>Labeo boggut</i> (sykes 1838)	Bata	Less	Sukali damp	Vulnerable
6	<i>Garra mullya</i> (Sykes 1841)			Ekburji damp	Least concern
7	<i>Puntius sophore</i> (Hamilton- Bachanan 1822)	Gudda-pakke	High	Borala damp	Theratend
8	<i>Cirrhinus reba</i> (Hamilton-Bachanan 1822)	Arja	Less	Khandala damp	Least concern
9	<i>Ompok bimaculatus</i> (Lacepede 1803)	Godalae	High	Borala damp	Near Threatened
10	<i>Mystus bleekeri</i> (Day)			Sukali damp	Theratend
11	<i>Mystus cavasius</i> (Hamilton-Bachanan 1822)	Girlu	Less	Ekburji damp	Least concern
12	<i>Wallago attu</i>	Lachi	High	Khandala damp	Near Threatened
13	<i>Tilapia mosambica</i> (W.K.H pterus 1852)	Tilpia	Less	Supkhela damp	Near Threatened
14	<i>Glossogobius giuris</i> (Hamilton-Bachanan 1822)	Jilebi	High	Tornala damp	Least concern
15	<i>Mastocemelus armatus</i> (Scopoli 1777)	Haavu-meenu	Less	Tornala damp	Least concern
16	<i>Notopterus notopterus</i> (pallas 1769)	Chappali	Less	Tornala damp	Least concern
17	<i>Rasbora daniconius</i> (Hamilton)	Blackline Rasbora,	Less	Tornala damp	Least concern
18	<i>Crossocheilus latius</i> (Hamilton)	Gangetic Latia	Less	Supkhela damp	Least concern
19	<i>Anguilla bengalensis</i> (Gray)	Vaam	High	Ekburji damp	Least concern
20	<i>Channa striata</i> (Bloch)	viral	High	Ekburji damp	Least concern
21	<i>Salmostoma</i> sp.	Myanmar	Less	Ekburji damp	Least concern
22	<i>Chanda nama</i> (Hamilton)	Glass Perchlet	High	Supkhela damp	Least concern

Table 2: List of fresh water fishes from the Khadkurna Reservoir with their Economic and conservation status.

According to the study's findings, Cypriniformes, which include the fish species *Labeo rohita*, *Catla catla*, *Cirrhinus mrigala*, *Cyprinus carpio*, *Labeo boggut*, *Garra mullya*, and *Puntius sophore*, are the dominant group in the assemblage composition and account for 50% of all fish diversity. The three species that were most prevalent were *Crossocheilus latius*, *Rasbora daniconius*, and

Cirrhinus reba, *Salmostoma* sp., *Ompok bimaculatus* and *Wallago attu* are members of the Siluridae family, which makes up 9.09% of all fish species. *Mystus bleekeri* and *Mystus cavasius* were found in the Bagridae, which contributed 9.09% to the overall fish diversity. *Tilapia mosambica* was found in the Cichlidae, which contributed 4.54% to the total fish diversity. *Glossogobius giuris* species include

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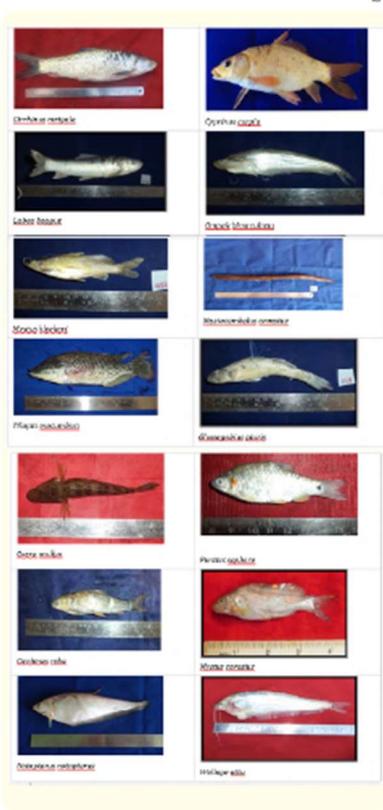


Diversity of Fresh Water Fishes from the Khadkpurna Reservoir of Maharashtra, India

gobiidae, which contribute 4.54% to all fish diversity. The family *Mastocembelidae*, in which *Mastocembelus armatus* was the dominant species, was reported to contribute 4.54% of the total fish diversity. Six species of *Notopteridae* were identified, contributing 4.54% of the total fish diversity, including the *Notopterus notopterus* fish. *Anguilla bengalensis* is a member of the *Anguillidae* family, which makes up 4.54% of all fish species. *Channa striata*, a member of the *Channidae* family, contributes 4.54% to the diversity of all fish. 4.54% of all fish with *Chanda nama* belong to the *Ambassidae* family.

In terms of freshwater fish species, India is one of the nations with "Mega diversity". India ranks third in Asia and eighth in the world for diversity of freshwater fish. There are many species that can be cultivated. The value systems of the society should also take the local fish into consideration (sport, biological control, aesthetic, etc). Declaring fish sanctuaries or aquatic diversity management areas for the bodies of water that are home to endangered fish is necessary. To stop the depletion of freshwater fish resources, illegal fishing practises should be outlawed in this region, and fish farmers should have access to scientific training and facilities in addition to being made aware of fishing practises. Fishing on spawns, larval fish, and immature fish should be avoided, and large-scale loan subsidies could help with high yield fish production. It was further concluded that research could be done to create methods for cultivating fish, safeguarding them, and conserving their biodiversity.

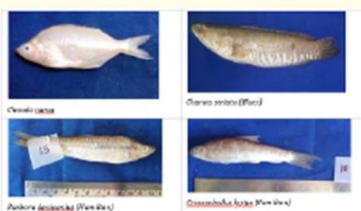
If proper conservation measures are not taken, the loss of aquatic fish diversity is likely to worsen due to the human population's rapid growth increased reliance on aquatic fishery resources, such as water, and the ongoing introduction of exotic species into natural water bodies.



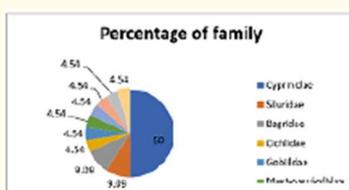
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Diversity of Fresh Water Fishes from the Khadkpurna Reservoir of Maharashtra, India



Photoplate 1: Fish Diversity of Khadkpurna Reservoir



Photoplate 2: Pie diagram showing Percentage occurrence of familywise distribution freshwater fishes of Khadkpurna Reservoir.

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Lonar Crater: A Case Study

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Abstract

Lonar Lake is located in Buldana district, Maharashtra state India. Geographical appearance of Crater Lake is 19°58'N and 76°31'E. Lake is oval, bowl or circular gloominess shape, and it have no any outlet. Geomorphometric status of Crater Lake is included in to five major zones these are, Ejecta-blanket, Rim, Escarpment or Slope, Alluvium and Lake Basin proper. The crater have much more diverse vegetation and it support microbial flora and fauna.

Keywords: Lonar; Crater; Plankton; Diversity; Microinvertebrates; Conservation

Introduction

Three permanent fresh water springs and a large number of seasonal streams feed the lake with no outlet. The reason the lonar ecology developed in its particular manner was [1,3,4].

- Its confined nature
- A higher basin humidity level
- A higher basin ground water level
- Abundance of enduring springs
- Salinized alluvium fan
- The vicinity of the crater's dry deciduous vegetation
- Shrubs and bushes growing on the escarpment
- Lush greenery and semi-evergreen elements along the shower line
- Plants in the alluvium that can withstand salt
- Salt-tolerant microbial flora and animals are supported by the lake.

Material and Method

Lonar Crater (19°58'N and 76°31'E) was used in the research. A distinctive meteoritic crater in basaltic rock is called Lake. It is surrounded on all sides by escarpments that rise sharply. It is located in a nearly circular depression. Since the lake basin is enclosed on all sides, it lacks an outlet. Lonar Lake has a localised temperature system since it is a subterranean hollow that is sealed off from all sides. The lake basin is partially shaded from direct sunlight at various locations and periods throughout the day [2].

Result and Discussion

Lonar Crater is third biggest crater in the world; the speciality of this crater is about its high salinity value which is not change throughout the year. Seasonally somewhat changes occur on water quality parameters but change not observed on diversity.

The goal of the current study is to learn more about the lake basin's natural features so that we can recommend sensible

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Figure 1: Satellite View of Lonar Crater.

precautions [5]. Investigate the microscopic flora and fauna, examine various data to determine the eutrophication condition and pollution level of Lonar Crater, and look into the effects of human interference on the crater's and lake's deterioration [6]. Water is home to tiny, microscopic organisms called planktons; which carry by Waves, tides, and currents. They are divided into two groups; the first includes phytoplankton, which are plants, and the second includes zooplanktons, which are animals [7]. They aid in providing information about the environmental conditions present in the water bodies. Blue green algae and bacteria were the most notable traits found in the saline lake water. These types of tiny forms are so well adapted to this environment that there is absolutely no potential for their survival in a high alkaline medium then also such tiny microorganism adapted such environment [8]. Except for Lonar Lake, luxuriant growth of spirulina is unknown [12]. Other members of the Chlorophyceae family (green algae) include *Chlamydomonas* species, *Oedogonium* species, and *Rhizoclonium* species, *Anabaena* sp., *Arthrospira*, *Nostoc sphaericum*, *Oscillatoria*, *Spirulina subsalsa*, and *Hydrodictyon* sp. are among the species of the blue-green algae family (Cyanophyceae). *Asterionella*, *Closterium* sp., *Fragillaria*, *Cyclotella*, *Navicula*, *Navicula* sp., *Nitzschia*, *Nitzschia* sp. are all members of the Bacillariophyceae (Diatoms) family. In Lonar Lake, the phytoplankton population was found to be dominated by cyanophyceae group algae species. More tolerant of saline-alkaline lake water than chlorophyceae are the Bacillariophyceae species *Fragillaria*, *Navicula*, and *Cyclotella* (green algae). Chlorophyceae were the category most vulnerable to the Lonar Lake water [9-11].

The water of lakes and ephemeral ponds contains all four species of zooplankton, including copepods, copepodoids, ostracods, and rotifera. Rotifera dominated this group. The rotifers are very useful for determining the quality of the water in tropical areas. A challenge in water filtering could result from the quantity of rotifers. However they are also helpful in eliminating natural waste and pollution. A total of 28 taxa (Copepode 3, Cladocera 5, Rotifera 20) were identified among the groups of zooplanktonic organisms in the lake. Additionally, 23 zooplankton species (Copepode 3, Cladocera 6, and Rotifera 14) from the Ramgaya (Salinity >1 ppt.) stream that connects to the lake were studied. The *Brachionus plicatilis*, *B. caudatus*, and *Hexarthra intermedia* species were found at all of the sampling stations. Rotifera is the dominant group in the lake. Rarely seen in the brine itself, species like *Cephalodella catellina*, *C. gibba*, *Colerella adriatica*, *Lecane lamellata*, *Keratella quadrata*, *Synchaeta oblonga*, *Polyarthra vulgaris*, and *Lecane ovalis* are frequently found in seasonal ponds near the brine that have very low salinity. Cladocera (*Diaphanosoma brachyurum*, *D. magna*, *D. longiceps*, *Allona* sp., *Copepoda*, *Cyprhoe* sp., and *Harpacticoid Copepod Canthocampus* sp.) are also present in transient ponds near the lake's basin. *Brachionus plicatilis* and *Hexarthra intermedia* are described typical species of saline waters and characteristic pollution indicator species, and they belong to the dominant groups of Rotifers. In harsh and alkaline waters, rotifers were said to predominate. These eutrophiclake indicator species are found there. Additionally, the lake's eurythermal and eurihaline species include *Hexarthra intermedia*, *B. plicatilis*, *Keratella quadrata*, and *Lecane* sp. The rotifer *C. adriatica* is a lake species that prefers euryhaline waters with a pH range of 5.5 to 10.5 in most cases. The lake's pH is 10.5 and provides this species with an appropriate environment. The eurythermal species, known as cosmopolitan species, include *Keratella quadrata* and *Polyarthra vulgaris*, which can live in both freshwater and saltwater. In waters with high oxygen content, *Polyarthra vulgaris* is primarily found [13]. Wintertime is when more species are present.

Microinvertebrates

Molluscs, Oligochaetes, and Chironomus species are among the documented benthic species. These very large species of creatures, which eat algae, bacteria, and detritus in the form of particle matter, are found in the lakesediments (Organic matter). *Eristalis*, *Liriop*, larvae of *craneflies*, *dragonflies*, *mayflies*, and *mosquitoes*, as well

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as chironomids and nematode worms, were among the creatures found at this level. It is essential to preserve the wetland ecosystem with its wide variety of living things.

Other aquatic fauna

Due to its low dissolved oxygen content and high salinity, Lonar Lake did not exhibit any fish species in its water body. According to the hydrological study, worsening changes that contributed to eutrophication resulted in a decline in macrophytes and flora as well as an increase in pathogenic organisms. Because of this, rotifers in general and *B. plicatilis* and *B. caudatus* in particular dominate all other zooplankton groups, and hexarthra intermedia is also expanding in population. *Spirulina* sp. is the leading species of blue-green algae, which make up the majority of the phytoplankton community. The rapid multiplication of these algae is noticeable along with other blue-green algae, including *Arthrospira* and *Ocellotaria*, right after the monsoon arrives and progressively decreases as the dry weather lasts until June. Before the few years ago Agriculture activities is done inside the alluvium, for that cultivation farmer used fertilizers, insecticides etc. hence the heavy load of nutrient causes excessive development of algae and degradation. Due to excessive development of the algae causes algal Blooms, this blooms on the surface of water which prevent light from penetration hence the other microorganisms cannot survive after all they settle down at bottom. Some rotifers can tolerate salt, while others are indicators of the condition of the water, according to *B. Plicatilis*, a Cosmopolitan. *Rotatoria* sp. and other benthic rotifers, which tolerate salt, contaminate lake water. *Ostracoda* presence is another sign of dirty water. Environmental degradation is due to, used pattern of land, water utilization, farming in the alluvium of the lake.

Conclusion

Because of this, rotifers in general and *B. plicatilis* and *B. caudatus* in particular dominate all other zooplankton groups, and *hexarthra intermedia* is also expanding in population. *Spirulina* is the most prevalent type of blue green algae, which make up the majority of the phytoplankton community. The rapid multiplication of these algae is noticeable along with other blue-green algae, including *Arthrospira* and *Ocellotaria*, right after the monsoon arrives and progressively decreases as the dry weather lasts until

June. Zooplankton are also markers of pollution; while some benthic rotifers, such as *Rotatoria* sp., are salt-tolerant, they also contribute to lake water pollution. *B. Plicatilis* is cosmopolitan. *Ostracoda* presence is another sign of polluted water. Pollution and degradation, Water and land use pattern, Agriculture in the lake alluvium, Exploitation of water resources must be investigated to save the ecological wonder to reduction of flora fauna and macrophytes and increase in pathogenic organisms must be investigated thoroughly to conserve the Lake.

Recommendation

Human intervention

In the southern part of Lonar Crater, this temple can be found. Due to this temple, a sizable number of pilgrims journey through the ejecta blanket every year. During the Navratri celebration, College, School Tours etc. visit the crater every day. More than two lakh pilgrims/visitors do this. Clearly, this delicate environment cannot support this enormous number of pilgrims/visitors. This is a warning sign of unpleasant things to come in the future.

Deforestation

The agricultural operations of the framers, who cut trees and bring the firewood and fodder while retaining to the town from their fields that are at the bottom of the crater, have increased the deforestation on the escarpment and in the forest of alluvium. *Prosopis juliflora*, an invasive species that the forest department introduced, is quickly displacing a number of other indigenous species, which is a cause for serious concern. This situation needs to be fixed right away since it poses a serious threat to the crater ecosystem's floral diversity. To allow for the succession of native plants, *Prosopis juliflora* must be completely eliminated. It is suggested that native species be planted.

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