Janata Shikshan Sanstha's
Kisan Veer Mahavidyalaya, Wai
Tal. Wai, Dist. Satara, Maharashtra Pin-412 803.
Affiliated to Shivaji University, Kolhapur
NAAC Accredited : B+ (CGPA 2.66)
Website : www.kvmwai.edu.in
E-mail : wai161.cl@unishivaji.ac.in
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oskvmwai@rediffmail.com
prin.kvmwai@rediffmail.com
oskvmwai@gmail.com
UDISE No. : 27311111516
Index No. : J21.11.001
Kisan Mahadeo Veer
Founder President
Janata Shikshan Sanstha, Wai
Dr. Gurunath J. Fagare
Principal
Mob. 9421107635 / 9404140371
Shri. Shankarrao Dajiba Gadhave
Vice-President
Janata Shikshan Sanstha, Wai
Shri. Madan Prataprao Bhosale
President
Janata Shikshan Sanstha, Wai

Research & Development Cell (RDC)

Index

About the Cell

The Research & Development Cell (RDC) actively cultivates a robust research environment for both faculty and students. Our focus is on fostering a culture of innovation and exploration, particularly within emerging and challenging fields across Science, art, and Commerce. We encourage participation in conferences, seminars, workshops, project competitions, and other activities to strengthen research capabilities.

Guided by the leadership of Prin. Dr. G. J. Fagare, the RDC is firmly committed to achieving the college's vision and mission. Under his guidance, the college has secured over Rs. 2 Lakhs in research grants from Shivaji University, Kolhapur, which have supported our research endeavour’s.

Policy on Research & Development (RDC)

Introduction:

The college envisages the promotion of quality research within the higher education system. The college shall establish Research and Development Cell (RDC) to foster multidisciplinary/ transdisciplinary research culture.

Vision:

To put in place a robust mechanism for developing and strengthening the research ecosystem in the college.

Mission:

- To create a conducive environment for enhanced research productivity
- To encourage collaboration across industry, government, community-based organizations, and agencies at the local, national, and international levels
- To facilitate greater access to research through mobilization of resources and funding

Objectives:

1. To identify thrust areas of research, and form related cluster groups/frontline teams/consortia of researchers.
2. To identify potential collaborators from industry, research organizations, academic institutions & other stakeholders for cooperation and synergistic partnerships.
3. To extend guidance in preparation & submission of project proposals and post-sanctioning of the grants to oversee adherence to timelines.
4. To disseminate research outcomes to stakeholders and the public at large.
5. To monitor University-Industry Inter Linkage, Incubation, Innovation and Entrepreneurship Development and Intellectual Property Rights (IPR).
6. To make effective use of Information & Communication Technology (ICT) for preparing the database of in-house experts to provide industrial consultancy and services.
7. To promote mobility of researchers across institutions and R&D Labs.

8. To organize workshops and training programs and ensuring the integrity and ethical practices in research activities.

Researchers:

This policy will be applicable to all the researchers of the college and these researchers are defined as:

1. All staff, temporary and permanent, performing their teaching, research and administrative duties and supporting to the core values of the college.
2. All registered UG and PG students.
3. All research guides, experts from other institutes and sponsors associated with any research activities on the college.
4. Alumni having research aptitude

Scope:

1. Research activities including basic and applied, undertaken for achieving academic degrees and for solving problems.
2. Research activities as a part of completing minor or major research projects undertaken by all researchers and funded by different agencies.
3. Projects undertaken by the students as a part of academic achievement, part of curriculum or for enrichment.
4. Knowledge developing and communication initiatives related to academic progress.
5. Activities involving innovative ideas, concepts and start-ups leading to intellectual property rights.
6. Research endeavor leading to presentations and publications

Mechanism for Policy Implementation:

Research and Development Cell of the college shall shoulder the responsibility of implementing the research policy as per the guidelines provided by the UGC, State Government, University and IQAC.

Composition of Cell:

Research and Development Cell is important committee of the college, which decides all strategies of research policy and agenda and implements it. The cell comprises of the pool of expertise including Principal in role of leadership, Director nominated by the Principal among the distinguished researchers from the college, senior professors from all streams, research student representative, etc.

Functions:

1. The college aims at fostering the human elements (faculty, staff, scholars, and students), logistics (land, buildings, and facilities), knowledge resources (research equipment, project utilities, and consumables), fund flow, etc. through a steady, proficient, effective governance (Rules, Norms, and Policies) and financial (Grants and Funds) management.
2. The RDC will facilitate planning, implementation, and monitoring of research activities in the college, formulate rules, regulations, and policy frameworks for utilization of facilities and resources at the college.
3. The college will establish collaborations, teams/consortia, partnerships, and combined ventures for joint research activities through clustering institutions and organizations to facilitate the exchange of students, scholars, and faculty.
4. The RDC will create a blog or portal for Institutional Research Information and Institutional Repository and sign an MoU with UGC-INFLIBNET to access and upload the research information through Shodh Ganga, Shodh Gangotri, Shodh Sindhu, Shodh Shuddhi, and Shodh Chakra.
5. The Director (RDC), the members of the Cell and supporting administrative/technical staff will ensure smooth conduct of the research activities in the college.
6. Events like capacity-building programs (Research Methodology and Research Techniques) and specific research theme-based workshops and Research Internships will be organized to motivate the end-users (students, scholars, and faculties) to participate actively in the process of ideation and innovative research in emerging areas.
7. Incubation Centers will be formed to transform innovative ideas into processes and products administered and monitored by the RDC.
8. The RDC will focus on identifying specific incentives for research faculty.
9. The college will establish a hub of research to facilitate innovation, incubation, entrepreneurship and start-up ventures.
10. The college will make provision for research in the annual budget subject to the availability of funds.
11. A standard plagiarism check will be mandatorily implemented and the requisite software in this regard will be made accessible to all

researchers.

12. The RDC is going to organize regular events such as workshops, trainings/internships, group discussions and seminars/conferences for capacity building.
13. The RDC in the college will monitor and oversee research progress, coordinate program, manage and facilitate optimizing resources, timely review of research activities for completion of the projects as per schedule.
14. The RDC of the college will ensure that all the Research Labs in the institution fulfill the norms of Good Laboratory Practices (GLP) and Safety (Bio and Chemical) measures.

Coordinator
Internal Quality Assurance Cell
Kisan Veer Mahavidyalaya, Wai
Tal. Wai, Dist. Satara

KISAN VEER MAHAVIDYALAYA * Wai, Dist. Satara *

Principal
Kisan Veer Mahavidyalaya, Wai
Tal. Wai, Dist. Satara

Research Advisory Committee

Sr. No.	Name of Faculty Member	Position
1	Prin. Dr. G. J. Fagare	**Chairperson**
2	Prof. (Dr.) S. R. Sawant	Convener
3	Prof. (Dr.) D. N. Zambre	Member
4	Prof. (Dr.) V. R. Veer	Member
5	Dr. S. G. Throat	Member
6	Dr. B. M. Birajdar	Member
7	Dr. S. D. Kumbhar	Member
8	Dr. A. A. Sonkambale	Member
9	Dr. M. T. Jadhav	Member
10	Miss D. H. Chavan	Member
11	Mr. P. M. Dere	Stenographer

Available Facilities

Facility Centers are available for both internal and external researchers, providing access to advanced equipment and space for experiments. These centers are designed to support those who may lack adequate facilities within their own departments.

Our well-equipped Facility Centers offer access to a wide range of tools, including:

- **Chemical Bath Deposition (CBD) Setup:** For depositing thin films.
- **Successive Ionic Layer Adsorption and Reaction (SILAR) Method Setup:** For depositing thin films.
- **Calorimetry:** For measuring heat changes in physical and chemical processes.
- **Polarimetry:** For measuring the rotation of plane-polarized light.
- **Potentiometry:** For measuring the electrical potential difference between two electrodes.
- **Stirred Water Bath:** For maintaining a constant temperature for chemical reactions or biological samples.
- **Rotary Flask Shaker:** For mixing and agitating liquids.
- **Electronic Weighing Balance:** For precise measurement of mass.
- **Distilled Water Plant:** For producing purified water for experiments.
- **Hot Plate:** For heating and stirring liquids.
- **Suction Pump:** For creating a vacuum or transferring liquids.
- **Crucible Heaters (x2):** For heating small samples at high temperatures.
- **Dry Powder Fire Extinguisher:** For fire safety.
- **Conductometry:** For measuring the electrical conductivity of solutions.
- **Spectrometer:** For measuring the absorbance or transmittance of light by a sample.
- **Muffle Furnace:** For high-temperature heating.
- **Hydrothermal Unit:** For high-pressure and high-temperature chemical reactions.
- **Computer with Internet Facility and Printer:** For data analysis and documentation.
- **LCD Projector:** For presentations and discussions.

This comprehensive list ensures that researchers have the tools they need to conduct a wide range of experiments and analyses.

Photographs of Available Equipment's

Colorimetry

Spectrophotometry

Polarimetry

Potentiometri

Conductometry


Electronic Weighing Balance

Stired Water Bath

Rotary Flask Shaker


Distilled Water Plant


Hot Plate


Furness

Suction Pump

Crucible Heaters

Crucible Heaters

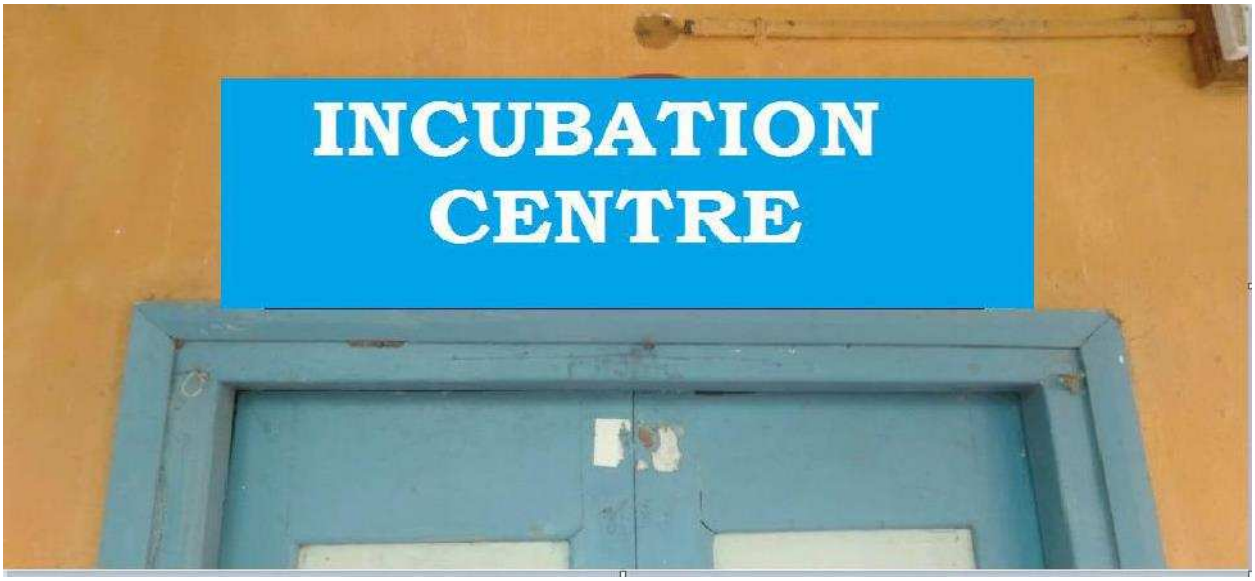
Dry Powder Fire Extinguisher


Calcination Furnace


Fuming Chamber


1 Classroom 24 X 25 Feet

Incubation Center



List of Ph.D. Research Guides

Sr. No	Name	Subject	Qualification
1	Prin. (Dr.) Fagare G. J.	Commerce	M.Com., Ph.D., G.D.C.& A
2	Prof. (Dr.) Zambre D. N.	Chemistry	M.Sc., Ph.D.
3	Prof. (Dr.) Sawant S. R.	English	M.A., Ph.D.
4	Prof. (Dr.) Veer V.R.	Geography	M.A., NET, Ph.D.
5	Prof. (Dr.) Agedkar B. B	Hindi	M.A., Ph.D.
6	Dr. Thorat G. S.	Marathi	M.A., NET, Ph.D.
7	Prof. Dr. I. F. Pailwan	Zoology	M.Sc., Ph.D.
8	Dr. J. V. Kathare	History	M.A., Ph.D.
9	Dr. K. N. Sontakke	History	M.A., Ph.D.

List Faculties awarded Ph.D.

Year	Subject	Department	Faculty Name	Thesis Title	University Name	Registration Date	Awarded Date	PDF
2018-2019	Botany	Botany	Dr. Manjusha Vijay Ingawale	Studies on Diatoms of major water bodies from Satara district (Maharashtra)	Shivaji University, Kolhapur	30-11--0001	20-02-2019	View
2019-20	Mathematics	Mathematics	Dr. Shivaji Ramchandra Tate	ON NONLINEAR FRACTIONAL ORDER DIFFERENTIAL EQUATIONS	Shivaji University, Kolhapur	01-06-2013	31-01-2020	View
2020-21	Library & Information Science	Library	Dr. Shivaji P. Kamble	A Study of Library Services to Measure the Impact on Teachers of Affiliated Colleges of Shivaji University. Kolhapur	Shivaji University, Kolhapur	01-07-2011	06-10-2020	View
2020-21	English	English	Dr. Ambadas Dadasaheb Sakat	The Theme of Exploitation in the Select Novels of Mulk Raj Anand and Anna Bhau Sathe: A Study	Shivaji University,Kolhapur	01-07-2013	23-10-2020	View
2020-21	Statistics	Statistics	Dr. Rahul Hanmant Waliv	Development of Some Fuzzy and Fuzzy Stochastic Inventory Models for Deteriorating Items	Shivaji University, Kolhapur	01-07-2013	03-10-2020	View
2021-22	Psychology	Psychology	Dr. Anand Ganpatrao Ghorpade	A Cross Sectional Study of Contextual Influence on Cognitive Distortion,Lucus of Control, Physical and Psychological Distress Among Substance Using Adolescents	Swami Ramanand Teerth Marathwada University, Nanded	12-02-2016	14-10-2021	View
2020-21	Marathi	Marathi	Dr. Chandrashekhar Madhukar Bharati	Vyanktesh Madgulkar Yanche Kathavdmay: Yek Samajshastriy Abhyas	Savitribai Phule Pune University	17-10-2014	29-07-2021	View
2020-21	Synthesis and Characterization of Mixed Metal Oxides for gas Sensing Application	Chemistry	Name of Student: Rohit Ramchandra Powar Name of Guide:Prof. Dr. D.N. Zambare	Synthesis and Characterization of Mixed Metal Oxides for gas Sensing Application	Shivaji University, Kolhapur	14-01-2014	16-11-2019	View
2022-23	History	History	Dr. Bhimashankar Birajdar	Environmental and Ecological Movements in Maharashtra (1960-2010)	Shivaji University, Kolhapur	01-07-2012	23-08-2022	View

2021-22	Zoology	Zoology	Dr. Ravindra V. Bakare	Study Of Fresh Water Protozoa In Selected Lentic And Lotic Habitats From Satara District (M. S. India)	Shivaji University, Kolhapur	16-06-2014	07-04-2022	View
2023-24	English	English	Tabassum Muzfferhusen Attar	The Novels of Amitav Ghosh - A Study in Ecoconsciousness	Shivaji University, Kolhapur	01-07-2017	08-01-2024	View
2022-23	Commerce and Management.	Commerce	Shri. Chile Sarjerao Sadashiv	Human Resources Management Practices in Post Acquisition Period: A Comparative Study of Selected Banks in Kolhapur District.	Shivaji University, Kolhapur.	30-11--0001	05-08-2022	View
2023-24	Business Management	Commerce	Shri. Jagtap Sachin Hanumant	Impact of Background Music on the Consumer Satisfaction and Employees Efficiency in Selected originations in Kolhapur District.	Shivaji University, Kolhapur.	30-11--0001	10-01-2024	View
2022-23	Marathi	Marathi	Amol Subhash Kawade	A Comparative Study of Marathi and Gujarati Dalit Story Writers (Vaman Howal and Pravein Gadhavi)	University of mumbai	14-12-2016	26-04-2023	View
2021-22	Botany	Botany	Dr. Mrs. Damayanti Amit Choudhari	BIOCHEMICAL STUDIES OF SOME SELECTED MEDICINALY POTENTIAL PTERIDOPHYTES FROM PANCHGANI AND MAHABALESHWAR HILLS.	Shivaji University Kolhapur	01-07-2013	21-06-2021	View

List of PhD degrees awarded under the guidance of Kisan Veer Mahavidyalaya Faculty during 2018-23

Year	Department	Subject	Name of the Research Guide	Date of Guideship Allotted	University Name	No of Students Allotted	No of Students Completed PhD Thesis	No of Students Doing PhD Thesis	PDF
2018-19	English	English	Dr. Sunil Raghunath Sawant	10-11-2004	Shivaji University, Kolhapur	13	7	6	View
2018-19	Geography	Geography	Dr, K. N. Sontakke	20-08-2018	Shivaji University, Kolhapur	4	0	2	View
2018-19	Geography	Geography	Dr. V. R. Veer	03-04-2012	Shivaji University, Kolhapur	8	0	8	View
2018-19	History	History	Dr. J. V. Kathare	05-12-2016	Shivaji University, Kolhapur	4	0	4	View
2018-19	Hindi	HINDI	DR.BHANU DAS AGEDKAR	31-08-2018	SHIVAJI UNIVERSITY KOLHAPUR	3	1	2	View
2019-20	English	English	Dr. Sunil Raghunath Sawant	10-11-2004	Shivaji University, Kolhapur	13	7	6	View
2019-20	Geography	Geography	Dr. V. R. Veer	03-04-2012	Shivaji University, Kolhapur	8	0	8	View
2019-20	Hindi	Hindi	Dr.Bhanudas Bhikaji Agedkar	30-11--0001	Shivaji University,Kolhapur	2	0	2	View
2019-20	Marathi	Marathi	Dr. Sangram Gopinath Thorat	23-08-2019	Shivaji University, Kolhapur	3	0	0	View
2019-20	Zoology	Zoology	Prof. Dr. I. F. Pailwan	30-11--0001	Shivaji University, Kolhapur	0	0	0	View
2019-20	Chemistry	Chemistry	Prof.Dr.Dnyandevo Namdevo. Zambare	14-10-2008	Shivaji University Kolhapur	5	1	4	View
2020-21	Geography	Geography	Dr. V. R. Veer	03-04-2012	Shivaji University, Kolhapur	8	3	5	View
2020-21	English	English	Prof. Dr. Sunil Raghunath Sawant	10-11-2004	Shivaji University, Kolhapur	13	7	6	View
2021-22	English	English	Prof. (Dr.) Sunil Raghunath Sawant	10-11-2004	Shivaji University, Kolhapur	6	7	6	View
2022-23	Geography	Geography	Dr. V. R. Veer	03-04-2012	Shivaji University, Kolhapur	8	4	4	View
2022-23	English	English	Prof. (Dr.) Sunil Raghunath Sawant	10-11-2004	Shivaji University, Kolhapur	6	7	5	View
2022-23	Commerce	Commerce and Management	Dr. Gurunath Jotiba Fagare	18-03-2010	Shivaji University, Kolhapur.	12	7	4	View

Minor Research Projects Sanctioned

Year	Nature of Project	Duration Year From-To	Name of the Investigator	Department	Title of the Project	Name of the funding agency	Sectioned Grant	Received Grant	Total Grant Received till Date
2019	Miner	2017-2019	Mr. Bhimashankar M. Birajdar	History	'Revisiting Green Ideology of Mahatma Gandhi: An Environmental History Perspective'	Kisan Veer Mahavidyalaya, Wai	5,000/-	5,000/-	5,000/-
2022-23	Miner	2023-2025	Dr. Bhimashankar M. Birajdar	History	Global Climate Change and Environmental Sustainability : Challenges and Developmental Alternatives in Western Maharashtra	Shivaji University, Kolhapur Under Diamond Jubilee Research Initiation Scheme	Rs. 1,0000/-	Rs. 50,000/-	Rs. 50,000/-
2022-23	Other	11 October 2023 To 10 October 2025	Dr. Balkrishna Sonappa Magade	English	Explorations in Cinematic Ecocriticism of Select Marathi Films (2001-2020)	Shivaji University, Kolhapur	100000/-	50000/-	50000/-

SHIVAJI UNIVERSITY, KOLHAPUR-416 004,
MAHARASHTRA
PHONE :EPABX-0231-2609000, 2609145,
www.unishivaji.ac.in, stats@unishivaji.ac.in
शिवाजी विद्यापीठ, कोल्हापूर -४१६ ००४, महाराष्ट्र.
दुरध्वनी: (ईपीएबीएक्स) ०२३१-२६०९०००, २६०९१४५

Estd: 1962
"A++" Accredited by NAAC(2021)
With CGPA 3.52

Ref No. : SU/C&U.D.S/2022-2023/Humanities/5/ 424 Date: 11 OCT 2023

To,
Dr. Magade Balkrishna Sonappa,
Kisan Veer Mahavidyalaya, Wai,
Tal-Wai, Dist-Satara - 412 803

Sub: Financial Sanction for Research Project under **Diamond Jubilee Research Initiation Scheme 2022-2023 for Affiliated Colleges.**

Ref : Our Office Circular No : SU / C.&U.D. Section/ 1122, dt. 29/11/2022.

Respected Sir/Madam,

With reference to your application for financial assistance under Diamond Jubilee Research Initiation Scheme 2022-2023, I am directed to inform you that your research project entitled **"Explorations In Cinematic Ecocriticism Of Select Marathi Films (2001-2020)"** has been accepted for the financial support under the above scheme for the period of two years from the date of sanction. The total grant for the project will be **₹.100000**/-. The first instalment of the project (i.e. advance) is **₹.50000**/-. The Details of the funds sanctioned:

Sr. No	Item	Amount sanctioned in Rs.			Grant released as First installment
		1st Year	2nd Year	Total	
A)	**Recurring**				
	1) Books and Journals	₹.25000/-	₹.25000/-	₹.50000 /-	₹.25000/-
	2) Hiring Services/Characterization	₹.5000/-	₹.5000/-	₹.10000/-	₹.5000/-
	3) Field Work and Travel	₹.15000/-	₹.15000/-	₹.30000 /-	₹.15000/-
	4) Chemical and Glassware	₹.0/-	₹.0/-	₹.0 /-	₹.0/-
	5) Contingency	₹.5000/-	₹.5000/-	₹.10000 /-	₹.5000/-
B)	**Non-recurring**				
	*Equipment	₹.0/-	₹.0/-	₹.0 /-	₹.0/-
	Total	₹.50000/-	₹.50000/-	₹.100000/-	₹.50000/-
* Name of the Equipments: **Nil**					

The second installment of remaining grant will be released after submission of Final Report, Utilization Certificate, and Statement of Expenditure & Two Years Original Bills.

The Principal Investigator is requested to strictly follow the rules the guidelines of the scheme and Terms & Condition on page no. 2, for smooth implementation of the project under the said scheme.

Guidelines of the scheme are available on University website.

Thanking You,

Yours faithfully,

Deputy Registrar,
Colleges and University Development Section
Shivaji University, Kolhapur

Copy to:

- **Account (P.G. Bill) Section**
- **The Principal,**
  Kisan Veer Mahavidyalaya, Wai, Tal-Wai, Dist-Satara - 412 803

SHIVAJI UNIVERSITY, KOLHAPUR-416 004,
MAHARASHTRA
PHONE :EPABX-0231-2609000, 2609145,
www.unishivaji.ac.in, stats@unishivaji.ac.in
शिवाजी विद्यापीठ, कोल्हापूर -४१६ ००४, महाराष्ट्र.
दुरध्वनी: (ईपीएबीएक्स) ०२३१-२६०९०००, २६०९१४५

Estd: 1962
"A++" Accredited by NAAC(2021)
With CGPA 3.52

Ref No. : SU/C&U.D.S/2022-2023/Humanities/11/ 430 Date: 11 OCT 2023

To,
Shri. Bhimashankar Madolappa Birajdar,
Kisan Veer Mahavidyalaya,
Wai, Tal -Wai, Dist- Satara - 412 803

Sub: Financial Sanction for Research Project under **Diamond Jubilee Research Initiation Scheme 2022-2023 for Affiliated Colleges.**

Ref : Our Office Circular No : SU / C.&U.D. Section/ 1122, dt. 29/11/2022.

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A)	**Recurring**				
	1) Books and Journals	₹.15000/-	₹.15000/-	₹.30000 /-	₹.15000/-
	2) Hiring Services/Characterization	₹.15000/-	₹.15000/-	₹.30000/-	₹.15000/-
	3) Field Work and Travel	₹.12500/-	₹.12500/-	₹.25000 /-	₹.12500/-
	4) Chemical and Glassware	₹.0/-	₹.0/-	₹.0 /-	₹.0/-
	5) Contingency	₹.7500/-	₹.7500/-	₹.15000 /-	₹.7500/-
B)	**Non-recurring**				
	*Equipment	₹.0/-	₹.0/-	₹.0 /-	₹.0/-
	Total	₹.50000/-	₹.50000/-	₹.100000/-	₹.50000/-

* Name of the Equipments: **Nil**

The second instalment of remaining grant will be released after submission of Final Report, Utilization Certificate, and Statement of Expenditure & Two Years Original Bills.

The Principal Investigator is requested to strictly follow the rules the guidelines of the scheme and Terms & Condition on page no. 2, for smooth implementation of the project under the said scheme.

Guidelines of the scheme are available on University website.

Thanking You,

Yours faithfully,

Deputy Registrar,
Colleges and University Development Section
Shivaji University, Kolhapur

Copy to:

- **Account (P.G. Bill) Section**
- **The Principal,**
  Kisan Veer Mahavidyalaya, Wai, Tal- Wai, Dist- Satara - 412 803

"Education through self-help is our motto" - KARMAVEER

Estd : 1965

Rayat Shikshan Sanstha's

DAHIWADI COLLEGE, DAHIWADI

Tal. Man, Dist. Satara : 415 508

[Arts, Science, Commerce, BCA, B.Voc.Agri., Bank Management, Defence Studies & Vocational Education]

Jr.College No. J-21.06.001
M.C.V.C. No. J-21.06.901

Phone : STD (02165) (O) 220231

Prin. Dr. Suresh T. Salunkhe [M.Sc.,Ph.D.,M.B.A.]

Founder : Padmabhushan Dr. Karmaveer Bhaurao Patil D.Litt.

[NAAC Third Cycle Reaccredited 'A' Grade (with CGPA 3.25)]

(Affiliated to Shivaji University, Kolhapur) Web. : www.dahiwadicollege.in E-mail : dcdprincipal@gmail.com

Ref No. 1817/2021-22

Date 06/01/2022

Linkage Proposal

(From Academic year 2021-2022)

Department of Geography Dahiwadi College Dahiwadi Tal- Man, Dist.- Satara 415508

Between

Department of Geography Kisan Veer Mahavidyalaya, Wai Tal- Wai, Dist- Satara 412803

Subject: Regarding Academic and Research linkage

Dear Sir,

Collaborative works between academic institutes have become a key of success in educational efforts. It plays a very vital role in research and educational filed. It encourages towards excellent research working institute.

Linkage between institute will encourage and facilitate the development of collaborative research, Patent and educational programme which will serve to encourage the research development and intellectual life on both campuses, thus Kisanveer Mahavidhyalaya Wai, Tal- Wai Dist- Satara wishes for collaborative work with your institute in research and educational filed.

It is understood that the details of joint activities will be agreeable in the following cases

Research activities: To Published Research Oriented activities in Collaboration of both the Institute.

Head,
Department of Geography
Dahiwadi College Dahiwadi

Head
Department of Geography
Dahiwadi College,Dahiwadi
Tal.Man,Dist.Satara

Principal,
Dahiwadi College Dahiwadi

PRINCIPAL
DAHIWADI COLLEGE DAHIWADI
TAL. MAN, DIST. SATARA

Head,
Department of Geography
Kisan Veer Mahavidyalaya, Wai

Head
Department of Geography
Kisan Veer Mahavidyalaya
Wai - 412803

Principal,
Kisan Veer Mahavidyalaya, Wai

PRINCIPAL
KISAN VEER MAHAVIDYALAYA
Wai, Dist. Satara

स्वातंत्र्याच्या अमृत महोत्सवी वर्षा निमित्य...

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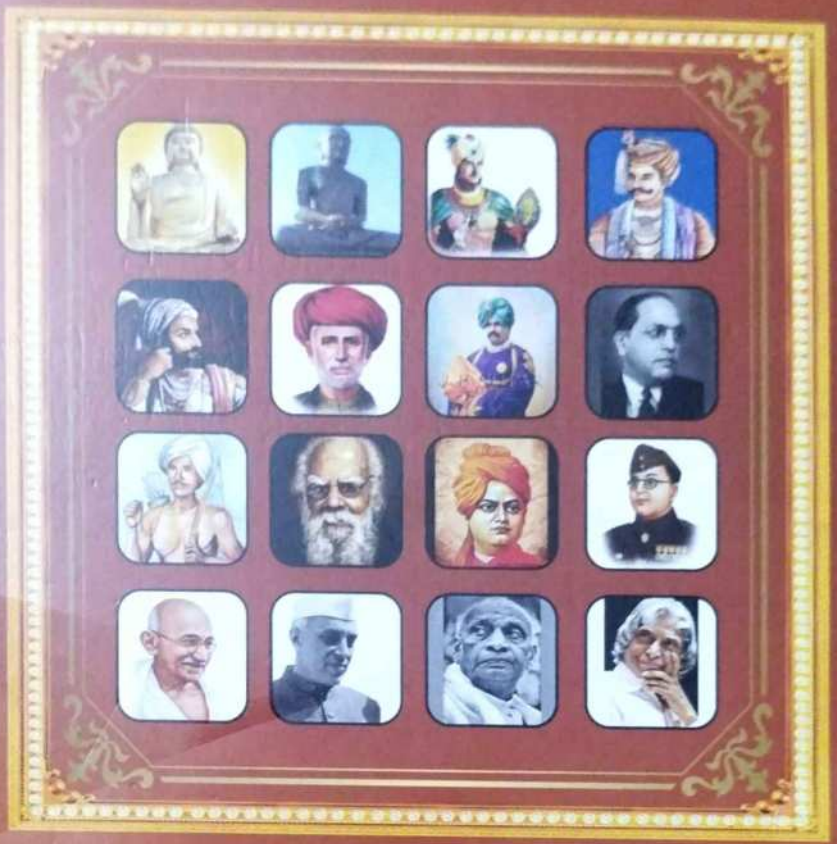

भारतीय महामानवांचा मानवतावाद

● संपादक ●

डॉ.वासुदेव डोंगरदिवे

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१५. भारतातील जल संसाधन विकासात डॉ. बी. आर. आंबेडकर यांचे योगदान

डॉ. अनिरुद्ध भोसले
सहाय्यक प्राध्यापक, भूगोल विभाग, दहिवडी कॉलेज दहिवडी.
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सारांश

भारतातील जलसंपदा विकासात डॉ. बी .आर. आंबेडकर यांचे महत्त्वपूर्ण योगदान लक्षात घेऊन केंद्रीय जलसंपदा, नदी विकास आणि गंगा पुनरुज्जीवन मंत्री उमा भारती यांनी अलीकडेच ६ डिसेंबर २०१६ रोजी झालेल्या एका चर्चासत्रात १४ एप्रिल हा डॉ. बी. आर. आंबेडकर यांचा जन्मदिवस 'जल दिवस'. म्हणून साजरा केला जाईल असे जाहीर केले आहे.'जल दिवस' पंतप्रधान श्री नरेंद्र मोदी यांनी मुंबईतील सागरी गुंतवणूक समिट २०१६ मधील उद्घाटन भाषणात डॉ. आंबेडकरांना भारतातील जल आणि नदी जलवाहतूक धोरणाचे शिल्पकार म्हटले. डॉ. आंबेडकरांनी १९४२– १९४६ दरम्यान पाटबंधारे आणि विद्युत ऊर्जा विभागाचे प्रभारी केंद्रीय मंत्रिमंडळ सदस्य म्हणून भारतातील जलसंपत्तीच्या विकासात मोठे योगदान दिले.

देशाच्या विकासात त्यांनी भरीव योगदान दिले असले तरी स्थिती, आश्चर्याची गोष्ट म्हणजे, त्याच्या जीवनातील या पैलूचा अभ्यास फारच कमी झाला आहे. त्यांच्या महान योगदानावर प्रकाश टाकणे हा या शोध निबंधाचा उद्देश आहे भारतातील जलसंपत्तीच्या विकासासाठी डॉ.बी. आर. आंबेडकर यांचे महत्त्वपूर्ण योगदान या शोध निबंधाचे स्वरूप वर्णनात्मक आहे. दुय्यम पुस्तके, संशोधन जर्नल्स, मासिके, वर्तमानपत्रे यांसारख्या स्त्रोतांचा अभ्यासाची उद्दिष्टे पूर्ण करण्यासाठी सखोल अभ्यास आणि विश्लेषण केले गेले. दामोदर व्हॅली कॉर्पोरेशन, हिराकुंड धरण, शोन आणि कोसी नदीच्या जोड प्रकल्पासाठी डॉ. आंबेडकरांचा मोठा वाटा आहे. प्रकल्प भारतातील पाणी प्रश्नांसाठी केंद्रीय प्राधिकरणाच्या स्थापनेत त्यांनी मोठे योगदान दिले.

प्रस्तावना

डॉ. आंबेडकर हे भारतीय राज्यघटनेचे शिल्पकार म्हणून प्रसिद्ध आहेत संविधान आणि शोषितांचे नेते. तथापि, काय कमी ज्ञात आहे भारतातील जलस्रोतांच्या विकासात त्यांचे योगदान आहे का? ''आंबेडकर बहुउद्देशीय विकासाच्या क्षेत्रात अग्रणी होते स्वतंत्र भारतासाठी प्रकल्प. खरं तर, त्याच्याकडे चालणारा आत्मा होता दामोदर व्हॅली, हिराकुड आणि इतर प्रकल्पांच्या मागे, '' केंद्रीय जल आयोगाने (CWC) आंबेडकरांचे जलस्रोतातील योगदान विकास–''नवीन'' विकसित करण्यात त्यांनी कशी मदत केली हे देखील आठवले १९४२– १९४६ च्या जलस्त्रोतांचा वापर करण्यासाठी पाणी आणि ऊर्जा धोरण प्रत्येकाच्या सर्वोत्तम देश फायद्यासाठी आहे. सध्याच्या राष्ट्रीय नदीजोड प्रकल्पाची कल्पना डॉ. बाबासाहेब आंबेडकरांनी १९४२ ते १९४५ दरम्यान मांडली आहे. यासाठी त्यांनी राज्यघटनेत तरतूद ही केली. फार कमी लोकांना जलनीती मधील त्यांच्या योगदानाबद्दल माहीत आहे. विशेष म्हणजे बाबासाहेबांनी महापुराच्या पाण्याचा विनियोग कसा करता येईल, हे देखील सांगितले होते. जाणून घेऊ या बाबासाहेबांची जलविषयक भूमिका, नदीजोड प्रकल्पाबद्दलची त्यांची कल्पना, घटनात्मक तरतुदी.

उद्दिष्टये

डॉ. बाबासाहेब आंबेडकर यांचे भारताच्या जल संसाधन विकासातील योगदान अभ्यासणे. तसेच डॉ. आंबेडकर यांचे भारताच्या
ल संसाधन विकासातील घटनात्मक तरतुदी अभ्यासणे.

. बाबासाहेब आंबेडकरांचे जल धोरण

डॉ. बाबासाहेब आंबेडकर भारतीय घटनेचे शिल्पकार होते. कायदा, समाजशास्त्र, मानववंशशास्त्र आणि राज्यशास्त्र अशा अनेक
ांत त्यांनी बहुमोल कामगिरी बजावली आहे. मात्र, देशाच्या आर्थिक आणि जलधोरणातही त्यांची मोठी भूमिका होती, हे फार कमी
कांना माहिती आहे. देशाची जलनीती, दामोदर खोरे प्रकल्प, हिराकुंड धरण, सोननदी प्रकल्प कार्यान्वित करण्यासाठी त्यांचे योगदान

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उल्लेखनीय व महत्त्वपूर्ण आहे. तसेच सध्याच्या राष्ट्रीय नदीजोड प्रकल्पाची कल्पना बाबासाहेबांनी १९४२ ते १९४५ दरम्यान मांडली होती. यासाठी पाण्यासंबंधी आंतरराज्य समस्या उदभवू नये म्हणून घटनेतच तरतुदी करुन ठेवल्या आहेत.

२० जुलै, १९४२ रोजी डॉ. आंबेडकरांनी मजूर मंत्री म्हणून सूत्रे हाती घेतली. त्यांचा व्हॉइसरॉय कार्यकारी मंडळाचे सभासद म्हणून समावेश करण्यात आला आणि त्यांच्याकडे श्रम,सिंचन व वीज हे विभाग सोपवण्यात आले. दुसऱ्या महायुध्दानंतरचे व्यापक आर्थिक विकासाचे धोरण आणि सिंचन व वीज या विषयावर तपशीलवार धोरण तयार करण्यासाठी बाबासाहेबांनी पुढाकार घेतला. १९३५च्या कायद्यानुसार श्रम विभागाने सिंचन आणि वीज विकासासाठी मुख्यत्वे तीन गोष्टी कार्यान्वित करण्याचे ठरवले. त्यामध्ये एकापेक्षा दोन राज्यांत वाहणाऱ्या नद्यांचे नियंत्रण व व्यवस्थापन करणे, राज्यांमधील नद्यांवर पाणी व जल विद्युत उर्जा संपत्ती निश्चित करणे आणि शासकीय व तांत्रिक विकास करण्यासाठी राष्ट्रीय सिंचन धोरण काय असावे या गोष्टींचा समावेश होता.

डॉ. बाबासाहेब आंबेडकरांच्या पाण्यासंबंधी घटनात्मक तरतुदी

डॉ. आंबेडकरांनी घटनेचा आराखडा घटना समिती समोर सादर करताना पाणी हा विषय केंद्र शासनाच्या अख्त्यारीत असावा, अशी भूमिका मांडली. त्यामुळे भारतीय राज्यघटनेत पाणी हा विषय क्रमांक ५६मध्ये अंतर्भूत होऊन केंद्र शासनालाही यासंबंधी कायदे करण्याचे अधिकार प्राप्त झाले. भारताच्या राज्यघटनेत ही तरतूद कलम २६२ मध्ये समाविष्ट करण्यात आली आहे. याच तरतुदीअंतर्गत आंतरराज्यीय जलविवाद कायदा नदीखोरे प्राधिकरण कायदा १९५६ पारित करण्यात आला.

डॉ. बाबासाहेब आंबेडकरांचा पुराच्या पाण्याच्या विनियोग विषयी दृष्टीकोण

नोव्हेंबर १९४५ मध्ये कटक येथे झालेल्या परिषदेत डॉ. आंबेडकरांनी अत्यंत मौलिक विचार देशाला दिले आहेत. 'पाणी आणि महापूर हे विनाशकारी आहेत, असे गृहीत धरुन सुचवू नका. देशामध्ये एवढे पाणी उपलब्धच नाही की जे हानिकारक ठरु शकेल. भारतीय जनतेला पाण्याच्या कमतरतेमुळे जास्त कष्ट सोसावे लागतात, जास्त पाण्याच्या उपलब्धतेमुळे नाही. पाणी राष्ट्रीय संपदा असल्यामुळे आणि पावसाळ्यात पडणाऱ्या पाण्याचे प्रमाण असमतोल आणि अविश्वासार्ह असल्यामुळे पुराच्या जास्त पाण्याविषयी तक्रार करण्यापेक्षा या पुराच्या पाण्याचा मनुष्याच्या विकासासाठी धरणे बांधून कसा उपयोग करता येईल, हा दृष्टिकोन बाळगला पाहिजे. त्यासाठी जेथे पुरामुळे नेहमी नुकसान होत असते त्या नद्यांवर ठिकठिकाणी धरणे बांधून हे पाणी समुद्राला जाऊ न देता विकासासाठी वापरणेच इष्ट ठरेल.' असे विचार त्यांनी मांडले होते.

डॉ. बाबासाहेब आंबेडकरांचा हिरांकुड धरण प्रकल्पा विषयी दृष्टीकोण

केंद्रीय जलमार्ग, पाटबंधारे, नौकायन आयोगाचे अध्यक्ष ए. एन. खोसला यांनी महानदीवरील बहुद्देशीय विकास प्रस्तावावर डॉ. आंबेडकरांशी चर्चा करुन हिराकुंड धरणाची अंमलबजावणी केली. आपल्या राज्यात पाण्याची, विजेची जी समस्या आपल्याला जाणवते आहे, नेमकी ती नैसर्गिक अथवा मानवनिर्मित आहे, यावर मोठी चर्चा होत आहे. डॉ. बाबासाहेब आंबेडकर काही इंजिनिअर नव्हते. त्यातले तंत्रज्ञान त्यांच्यापाशी नव्हते, पण जल आणि ऊर्जा विषयाचा सखोल अभ्यास मात्र त्यांच्या ठायी जाणवतो. हीच त्यांची नियोजन प्रक्रिया. जेव्हा एकूणच बहुआयामी महामानवाच्या जगण्याचा सूक्ष्म अभ्यास आपण करतो तेव्हा जल, वीज, पर्यावरण आणि त्याचा विकास यासंदर्भातली या महापुरुषाची भूमिका व नियोजन काय होते याकडे लक्ष जाते आणि त्यांच्या योजनांचा आपल्या महाराष्ट्रात अभ्यास व्हायला हवा, हेही कळायला लागते.

१९४२–१९४६ यादरम्यान ब्रिटिश काळात 'व्हाइसरॉय' मंत्रिमंडळात असताना 'श्रम खाते' त्यांच्याकडे होते. 'हिराकूड', 'दामोदर', 'सोन' नद्यांवरील धरणांची सुरुवात याच काळात झाली होती. डॉ. आंबेडकरांकडे श्रम, जलसिंचन आणि ऊर्जा खाते होते. म्हणूनच त्यांना नियोजनाचे पायाभरणी करणारे अभ्यासू म्हणता येईल. पर्यावरण, जलसिंचन, वीज योजना याविषयी डॉ. बाबासाहेबांनी संकल्पना मांडली, कारण भारत हा कृषिप्रधान देश आहे. शेतकरी सुखी झाला पाहिजे, ही त्यांची धारणा होती.

१९४२–१९४६ यादरम्यान धरण, प्रकल्प इत्यादीं विषयी धोरणे तयार करण्यासाठी त्यांनी महत्त्वाची जबाबदारी स्वीकारली. बहुउदेशीय नदया खोरे प्रकल्प (नदी खोरे प्रकल्प) हीच ती नेमकी योजना. डॉ. बाबासाहेबांच्या मते: अर्पुया भांडवलामुळे शेतीची कमी उत्पादकता होते. शेतीमधील दरडोई उत्पन्न कमी करण्याचे मुख्य कारण लोकसंख्येचा पडणारा प्रचंड भार. शेतीचे दरडोई उत्पन्न वाढवण्यासाठी शेतीवरील लोकसंख्येचा भार कमी करणे. औद्योगिकीकरणामुळे शेतीच्या विकासाची नेमकी गुरुकिल्ली आहे. औद्योगिकीकरणामुळे लोकसंख्येचा भारसुद्धा कमी होतो. ही वैचारिक मते त्यांनी १९१८ मध्ये मांडली आणि यावर १९४२–१९४६ दरम्यान नियोजन केले. नव्या जल आणि विद्युत धोरणाची पायाभरणी केली.

१९४५ मध्ये केंद्रीय जल आयोग स्थापन झाले. डॉ. ए. एन. खोसला या आयोगाचे अध्यक्ष होते. त्यानंतर डॉ. खोसला ओरिसाचे गव्हर्नर झाले. 'हिराकूड' धरणाची पायाभरणी १५ मार्च १९४६ रोजी झाली. याच काळात डॉ. बाबासाहेब मंत्रिमंडळात नव्हते.

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ओरिसा असेंब्लीने 'हिराकूड' धरणाचे विधेयक २८ ऑगस्ट १९४७ रोजी मंजूर केले. डॉ. खोसला यांच्या अध्यक्षतेखालील या समारंभास पं. जवाहरलाल नेहरू हजर होते. डॉ. खोसला आपल्या भाषणात म्हणाले, 'हा हिराकूड प्रकल्प सुरू करण्यात डॉ. आंबेडकरांचा मोठा वाटा व सहभाग आहे.' या समारंभात पं. नेहरू म्हणाले, 'धरणे भारताची आधुनिक मंदिरे आहेत.' दामोदर प्रकल्पाचा हेतू केवळ महापूर थांबवणे एवढाच नसून त्यामध्ये विद्युतशक्तीची निर्मिती, सिंचन योजना, पाण्याचा पुरवठा, जलवाहतूक आणि औद्योगिक वापरासाठी पाणी यांचा समावेश होतो. कूपनलिकेच्या साहाय्याने उपसा करून सिंचन उपयोगिता वाढवण्याचा आणि त्या ठिकाणी उत्पादनक्षमता वाढवण्याचा समावेश होतो.

निष्कर्ष

दामोदर खोऱ्याची योजना जेव्हा डॉ. बाबासाहेबांनी आखली, तेव्हा देश प्रेमाचा आणि जनकल्याणाचा उत्तम नमुना हे बाबासाहेबांच्या ठायी दिसतो. हा प्रकल्प अमेरिकेतील 'टेनिसी व्हॅली ॲथॉरिटी' प्रकल्पावर आधारित योजना आहे. महापुरामुळे मानवी जीवन रसातळाला जाते. हाच नेमका विध्वंस रोखून मानवी हित कसे करता येईल, या विषयीचे या थोर महामानवाचे विचार जाणून घेता येतील. नदीच्या पात्रात सुरुंग लावणे, नदीचे पात्र मोठे करणे, नदीचे पात्र खोल करणे, म्हणजे पुराचे पाणी नदीत सामावून जाईल. पुराच्या पाण्याचा साठा करून हरित क्रांती कशी करता येईल. हे विचार आजच्या युगात किती उपयोगी आहेत हे सिद्ध होते. महानदी, कोसी, सोन नदी प्रकल्प तयार झाला. प्रादेशिक विकासाचे प्रकल्प ज्यांनी तयार केले त्यांचे आम्ही ऋणी आहोत.'

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Morphometric Analysis of Ram Odha Sub Basin of River Nira

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ABSTRACT

Ram Odha originates near Yeroli village and meets River Nira in the north eastern side of Bhor city in Pune district, Maharashtra state. Ram Odha sub basin of River Nira covers 51.48 Sq.km area. Tropical evergreen forest is found in this sub basin. To achieve the Morphometric analysis characteristics Survey of India (SOI) Toposheet No. 47F/16 in scale 1:50,000 was used and base map, thematic maps and drainage maps were prepared with the help of Arc GIS Software. In the present study linear and areal parameters were consider for the morphometric analysis. A. N. Strahler stream ordering method was used for identification of drainage pattern and morphometric characteristics of Ram Odha sub basin of River Nira. 255 streams were recorded in this sub basin and total stream length is 198.91 km.

Key Words: *Morphometric Analysis, Toposheet, GIS.*

Water is essential for the existence of all plants, animals and human being. Hydrological cycle plays vital role to provide water for the earth surface. Morphometric analysis provides the beneficial parameter for the assessment of the potential ground water region, identification of suitable site for watershed management and treatment, identification of water runoff and geographic characteristic of the drainage system. In the present study GIS is used as a tool for creation of digital data base. Arc GIS a powerful software of the analysis of geographic features was used for the Morphometric Analysis.

Study Area

Ram Odha originates near Yeroli village at the height of 1377 meter above mean sea level. This odha is one of the important streams of River Nira. *Ram Odha* stream meets River Nira near Bhor city in Bhor taluka. *Ram Odha* sub basin of River Nira covers 51.48 Sq. km. area. *Ram Odha* sub basin lies between 18˚ 0' north to 18˚ 10'north latitude and 73˚ 47' east to 73˚ 54' east longitude. The study area receives average annual rainfall above 1065 mm (Fig.1).

Objectives

1. To access digital database of *Ram Odha* sub basin of River Nira.
2. To study the morphometric characteristic of *Ram Odha* sub basin of River Nira.

Database and Methodology

The present study based on the Secondary data. Maps were created with the help of Arc GIS software using SOI Toposheet No. 47F/16. A. N. Strahler's Method was used for stream ordering. Mathematical methods were used for calculating Bifurcation Ratio, Drainage Density and Creation.

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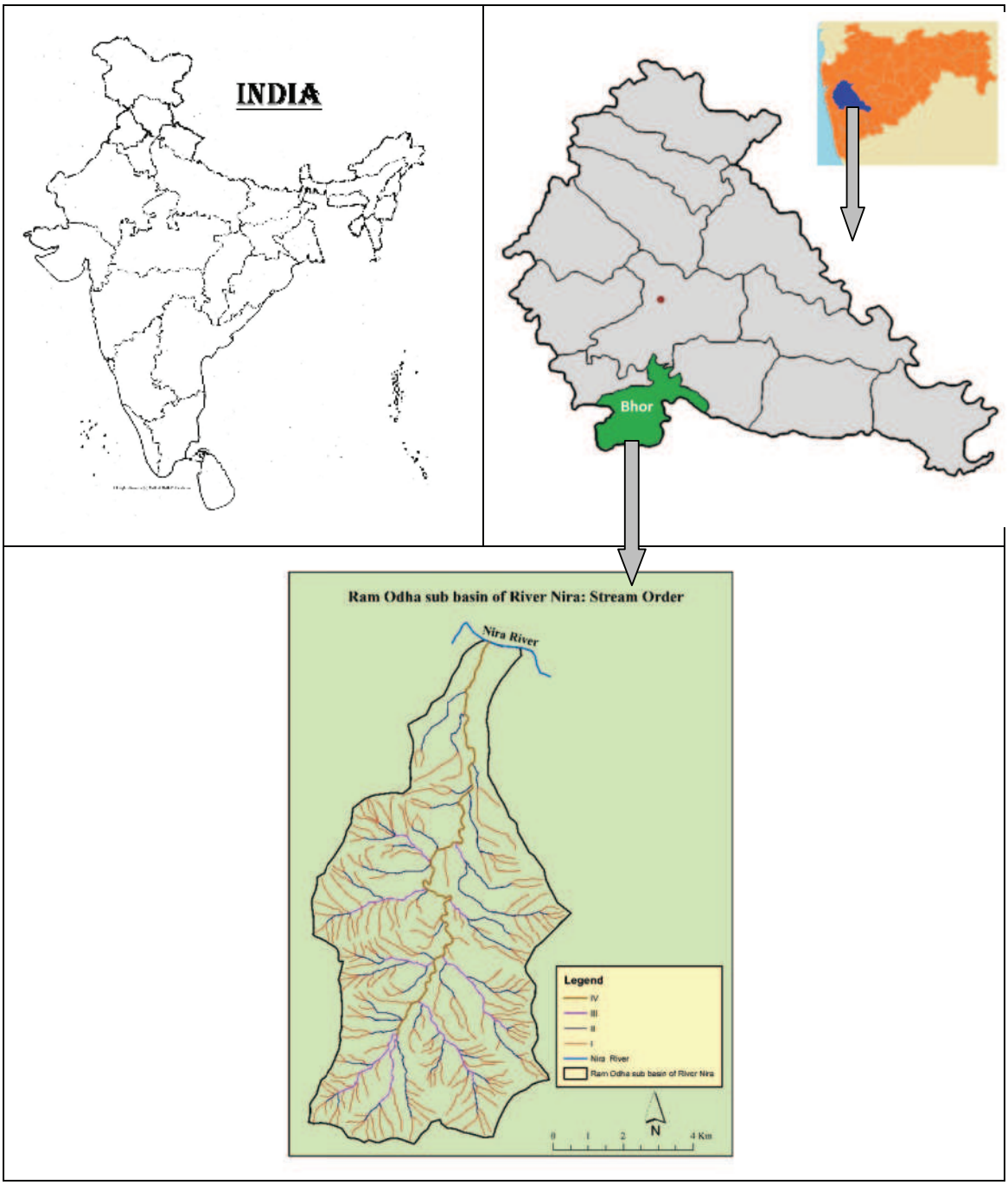

Fig: 1 Location Map

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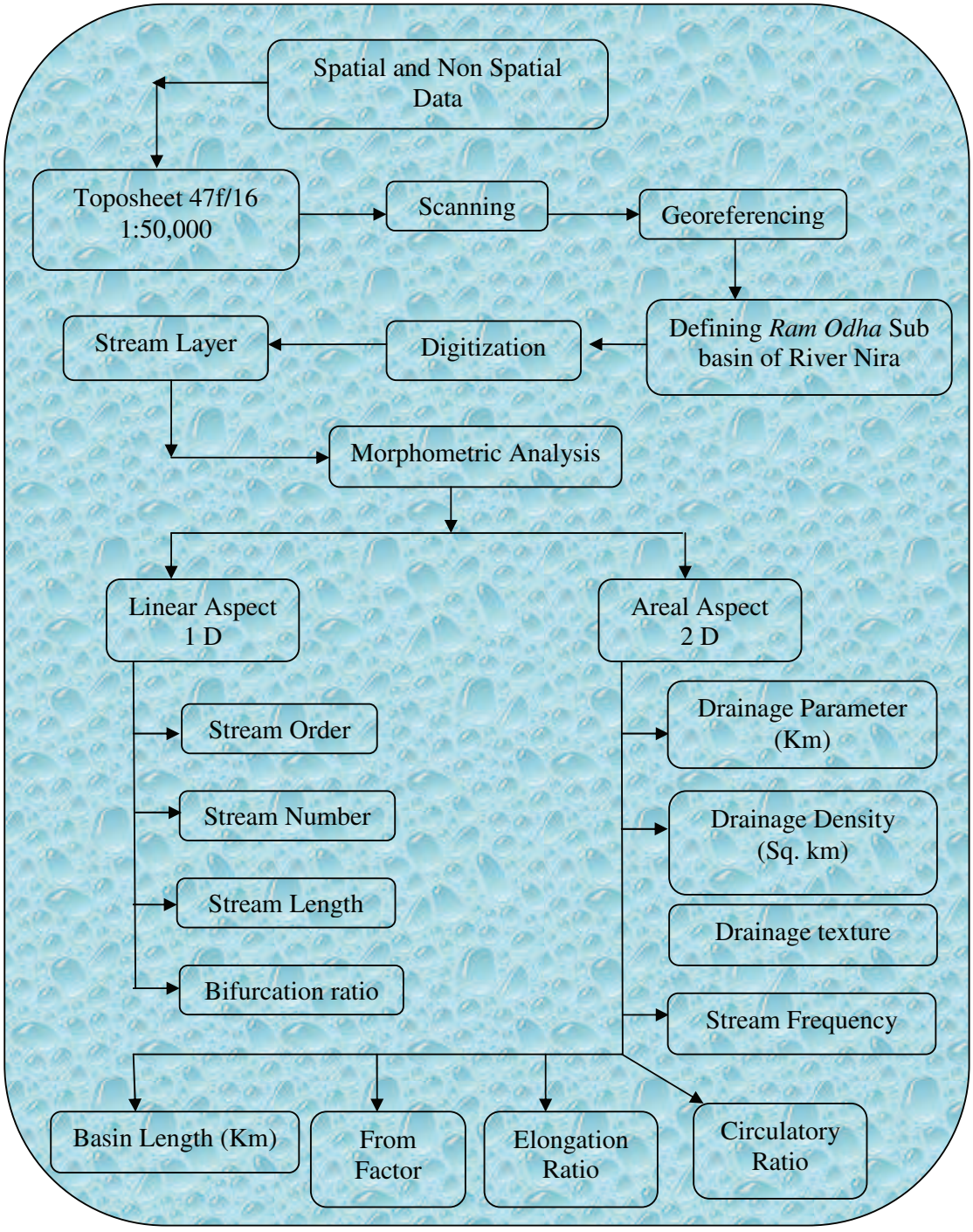
Methodology for Morphometric Analysis



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Result and Discussion

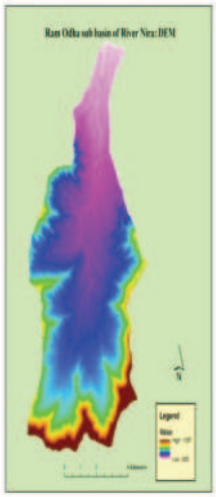

Fig: 2

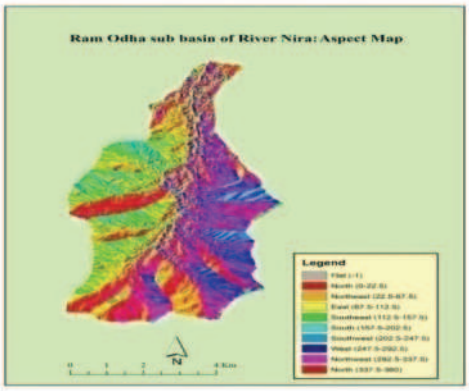

Fig: 3

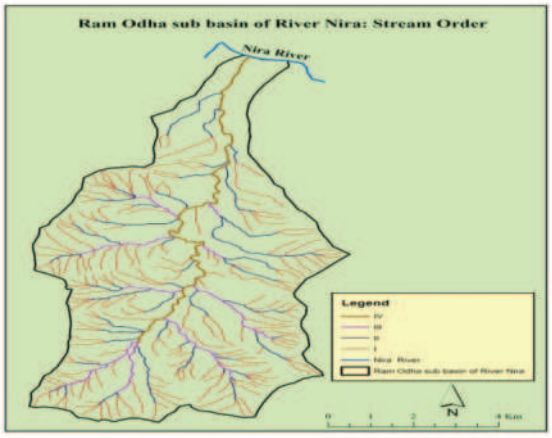

Fig: 4

Table: 1 Stream Order and Number of Stream in *Ram Odha* sub basin of River Nira

Stream order	No. of Stream	In %
I	194	76.08
II	51	20.00
III	9	3.53
IV	1	0.39
Total	255	100

Source: Compiled by Researcher

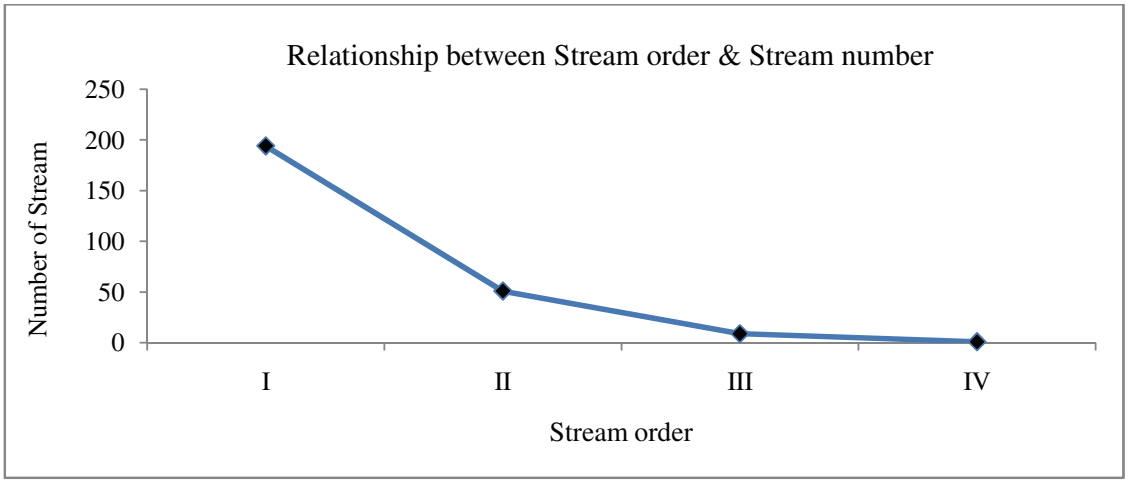

Fig: 5

The above table 1 shows the distribution of stream order and stream numbers in *Ram Odha* sub basin of River Nira. Fourth order is a last stream order in this sub basin. Total 255 streams have been observed. Among them 194 streams are of first order. Total number of second, third and fourth order streams are 61. Stream order analysis revels that there is negative correlation between stream order and stream number (Fig.2).

Table: 2 Stream Order and Stream Length of *Ram Odha* sub basin of River Nira

Stream order	Stream Length in km	In %
I	126.67	63.68
II	42.52	21.38
III	15.95	8.02
IV	13.77	6.92
Total	198.91	100.00

Source: Compiled by Research Student

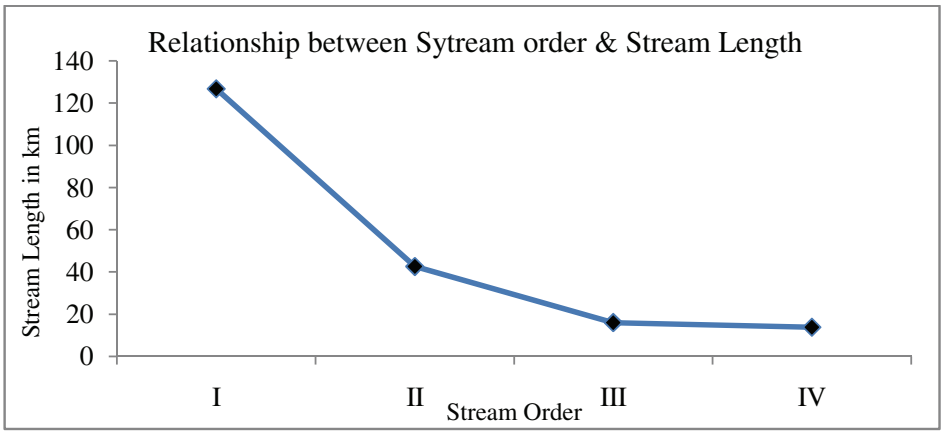

Fig: 6

The above table 2 represents the total length of streams of different orders. The total length of streams in *Ram Odha* sub basin of River Nira is 198.91 km. Out of this 126.67 km length is of first order stream. Total second order stream length is 42.52 km. Third and fourth order stream length in study region is 15.95 km and 13.77 km respectively. Stream order and stream length analysis revels that there is negative correlation between stream order and stream length.

Table: 3 Bifurcation Ratios of *Ram Odha* sub basin of River Nira

Stream order	**No. of Stream**	**Bifurcation Ratio**
I	194	3.80
II	51	5.67
III	9	9
IV	1	-
Mean Bifurcation Ratio		4.62

Source: Compiled by Researcher

Horton (1945) defines bifurcation ratio as the ratio between the numbers of stream of any given order to the number in the next lower order. The above table 2shows the bifurcation ratio of *Ram Odha* sub basin of River Nira. In *Ram Odha* sub basin of River Nira mean bifurcation ratio is 4.62.

Table: 4 Areal Aspect of *Ram Odha* sub basin of River Nira

Area in Sq. Km	**Drainage Density in Sq.km**	**Perimeter in Km**	**Stream Frequency**	**Drainage Texture**	**Circulatory Ratio**	**Basin Length in Km**	**Elongation Ratio**	**Form Factor**	**Compactness Coefficient**
51.48	3.86	36.98	4.95	6.89	0.47	13.17	0.31	0.29	0.14

Source: Compiled by Researcher

Table: 5 Methods used for Morphometric Analysis

Morphometric Parameters	Formula	Reference
1.Linear aspect		
Stream Order (U)	Hierarchical order	Strahler (1964)
Stream Length (Lu)	Length of the stream	Horton (1945)
Bifurcation Ratio (Rb)	Rb = Nu/Nu+1 Where, Nu = Total number of stream segment of order 'U'; Nu+1 = Number of segment of next higher order	Schumn (1956)
2.Areal Aspect		
Drainage Density (Dd)	Dd = L/A Where, L = Total length of streams of all orders A = Area of the basin (km2)	Horton (1945)
Stream Frequency (Fs)	Fs = N/A Where, N = Total number of stream. A = Areas of the basin (km2)	Horton (1945)
Drainage Texture (Rt)	Rt = Nu/P Where, Nu = Total number of streams of all orders P = Perimeter of the basin (km)	Horton (1945)
Circulatory Ratio (Rc)	Rc = 4πA/Lp2 Where, A=Area of the basin Lp=Perimeter of the basin	Miller (1953)
Elongation Ratio (Re)	Re=(2 × (A / π)0.5) / Lb Where, A=Area of watershed, π=3.14, Lb=Basin length	Schumn (1956)
Form Factor(Ff)	Ff = A / Lb2	Horton (1932)
Compactness Coefficients (Cc)	Cc = 0.2821 P/A0.5, A = areas of basin (km2), P = basin perimeter (km)	Horton (1945)

Conclusion

Total 255 streams have been observed in *Ram Odha* sub basin of River Nira. Among them 194 streams are of first order. Total Numbers of second, third and fourth order streams are 61. The total length of stream in *Ram Odha* sub basin of River Nira is 198.91 km. Out of this 126.67 km length is of first order stream. Total second order stream length is 42.52 km. Third and fourth order stream length in study region is 15.95 km and 13.77 km.

The drainage density of *Ram Odha* sub basin of River Nira is 3.86 km^2. Basin perimeter is 36.98 km. Maximum stream frequency indicates the large number of streams availability. The stream frequency of *Ram Odha* sub basin of River Nira is recorded 4.95. In *Ram Odha* sub basin of River Nira very fine type of Drainage texture has been observed. The higher the value of "C" more the circular shape of the basin and vice versa. Basin length is the longest dimension of a basin to its main drainage channel.Basin length in study region is 13.17 km. Elongation ratio of this watershed is 0.31 indicates a wide variation of climatic condition as well as geological formation and high relief steep ground slope. The form factor values of *Ram Odha* sub basin of River Nira is 0.29.

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