

Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College

Prin. T. A. Kulkarni, Vidya Nagar, Nashik- 422005 prinhptryknsk@rediffmail.com 20253-2572153



Cr. 6.5.2 Collaborative Quality Initiatives with Other Institutions



Permanently Affiliated to Savitribai Phule Pune University (ID No.: PU/NS/AS/001(1924) NAAC Re-Accredited: 'A' Grade I ISO 9001:2015 Certified I Best College award by SPPU 2019-20



LIST OF MoUs AND ACTIVITIES IN THE ASSESSMENT PERIOD

Sr. No.	Name of the collaborating agency/ institution / industry/ corporate house with whom the MOU is made	Year of signing MoU	Year and activities conducted
1.	Sathe Tours and Travels	2018- 2019	2019- Internship program and Job Opportunities
2.	Krishidoot Bio-Herbal Pvt.Ltd., Gate No-37, Jawalke Dindori, (10th Mail, Ozar), Tal Dindori, Dist- Nashik, MS India-422006	2018- 2019	2019- Working Experience and Training
3.	SWS Financial Solution Private Limited, Nashik	2019- 2022	2020- Crated Financial Literacy Club for students and organized series of lectures and practicals
			2020 - Eleocharis equisetina (Cyperaceae) New Distribution record (Research Collaboration)
	Rayat Shikshan Sanstha's Abasaheb Marathe's Arts, Science and Commerce College, Rajapur, Dist. Ratnagiri	2019- 2024	2020 - Lepidagathis ushae: a new species of Acanthaceae from the lateritic plateaus of the Konkan region, Maharashtra, India (Research collaboration)
4.			2020 - Pinda shrirangii, a new elegant species of Apiaceae from the northern Western Ghats, India (Research collaboration)
			2020 - Floristic diversity of Anjaneri Hills, Maharashtra, India (Research collaboration)
			2020 - Karyomorphology of Senecio hewrensis (Asteraceae): An Endemic Species from India (Research collaboration)
5.	Pune Vidyarthi Gruha,s S.S.D. College of Commerce Science & Arts, Mhasrul, Nashik- 42004	2020- 2021	2023- Seminar on Organic Chemistry (Mechanisms of Organic Reactions)
6.	A-Cube Holidays Nashik-422011	2021- 2022	2022- Campus Interview for Post of Tour Consultant, Holidays Sales Executive & Franchise Sales Executive
7.	Shree Nasik Panchavati Panjrapole, Panchavati, Nasik Maharashtra-422003 (SNPP), Contact Details:- Mr. Uday Joshi	2021- 2022	2023- Study Tour at Chunchale Farm

	info@snpp.in Associate manager 9226723622, 9226427447		
8.	Civil Hospital (Vibhagiya Sandarbh Seva Rugnalaya) Nashik	2021- 2024	2023- Blood Donation Camp
			2023- Delivered Lecture by Tahsin Kazi on "Millets for Women Health"
9.	MAESA Foundation, Pimple Gurav, Pune- 411061 Maharashtra	Seva2021- 20242023- Blood Donation CampPune-2021- 20252023- Delivered Lecture by Tahsi "Millets for Women Health"2021- 20252023- Delivered Lecture by Dr. A Diversity of Plateaus and Screenii documentary on Anjaneri-"The H 2023- Delivered Lecture by Dr. A "Cultivation Conservation and Pr Millets"2021- 2023- Delivered Lecture by Dr. A "Cultivation Conservation and Pr Millets"2021- 2023- Delivered Lecture by Dr. A "Cultivation Conservation and Pr Millets"2021- 	2023- Delivered Lecture by Dr. Auti on Floral Diversity of Plateaus and Screening the documentary on Anjaneri-"The Hidden Treasure"
			2023- Delivered Lecture by Dr. Auti on "Cultivation Conservation and Promotion of Millets"
			2021- Vicoa gokhalei (Inuleae, Asteraceae), a new species from the northern Western Ghats, India (Research collaboration)
	Rayat Shikshan Sanstha's Arts, Science and Commerce College, Mokhada, Dist. Palghar	2021- 2031	2022- Eriocaulon shrirangii (Eriocaulaceae), a new species from the lateritic plateaus of Konkan region of Maharashtra, India (Research collaboration)
10.			2023- Workshop on Millets: Cultivation, Conservation & Promotion (Research collaboration)
			2023- Rediscovery of little-known-monotypic genus Karnataka P.K.Mukh. & Constance (Apiaceae) (Research collaboration)
			2023- NEW RECORDS OF GRASSES TO THE KARNATAKA STATE, INDIA (Research collaboration)
			2024- Tripogon salunkhei (Poaceae), a new grass species from Maharashtra state, India (Research collaboration)
11.	Chaitanya Psychology Study Centre	2022- 2023	2022- Internship program for Psychology Students
12.	Gramonnati, Mandal's Arts Commerce and Science College, Narayangaon	2022- 2023	2022- Online Lecture on "Implementation of NEP- 2020 in Senior College"
13.	CyberSanskar.com Sohum, 13 A Niwas Park, Opposite Nirmala Convent High School Nashik 422013	2022- 2023	2023- Lectures and Training in Cyber Security
14.	ARNI Analytical, Pandit Colony Lane No.3, Nashik. M.S. India 422002	2022- 2023	2023- Pharmaceutical Training Course in Analytical Techniques
15.	Manoday Mind Care Clinic & Sunshine Counselling & Therapy Center, Nashik	2022- 2023	2023- Group Counselling Session. Lecture by Dr. Hemant Sonanis
16.	Child Welfare Committee, Untwadi Road, Nashik	2022- 2023	2023- Case History Taking, Interactive Session, Individual Counselling, Parental Counselling

17.	Krishna Dwaipayana Gurukula, C/O Shree GopalKrishna Seva Sangh, Reg.No. Maha/12/2017 Shree GopalKrishna Mandir, Gopalpura, Dondaicha, Shindkheda, Dhule 425408	2022- 2023	2022- Research Methodology Workshop
18.	Sahyadri Shikshan Mandals, Mahant Jamanadas Maharaj, Arts Commerce and Science College, Karanjali	2022- 2027	2023- Workshop on Millets

PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5





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List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	Sathe Tours and Travels	2018-19	1.	2018	Internship program and Job Opportunities



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5





Internship Letter

This letter certifies that Ajinkya Patil has successfully completed an internship as a Asst. Tour Manager at Sathe Tours in Academic Year 2018-19. Throughout this period, Ajinkya Patil demonstrated exemplary dedication, enthusiasm, and professionalism in fulfilling the responsibilities associated with the role.

He is actively contributed to the planning and execution of tours, displaying a solid understanding of itinerary, coordination, and cultural interpretation. He effectively managed unforeseen challenges and maintained a positive attitude, showcasing adaptability and problem-solving abilities.

We extend our best wishes to Ajinkya Patil in his future endeavors and express our gratitude for his valuable contributions to our team.







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1.	Krishidoot Bio-Herbal Pvt.Ltd., Gate No-37, Jawalke Dindori, (10th Mail, Ozar), Tal Dindori, Dist- Nashik, MS India-422006	2018-19	1.	2019	Working Experience and Training



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

Memorandum of Understanding (MOU) Between

Department of Botany, Gokhale Education Society'sH.P.T. Arts and R.Y.K. Science College, Nashik, Maharashtra- 422005

Krishidoot Bio-HerbalPvt. Ltd., Gate No.37, Jawalke Dindori ,(10th Mail, Ozar), Tal Dindori,Dist- Nashik, Maharashtra-422206

1. Aim of this MOU:

Knowledge exchange for students and staff training through workshops, seminars, and guest lectures, visits to laboratory, student's projects.

2. Objectives:

The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

1. Internship/ projects

2. Industrial visits

Knowledge sharing

4. Joint research and publications

5. Resources sharing and exchange

This MOU shall be effective only after Department of Microbiology, HPT Arts and RYK Science College, Nashik, and Krishidoot Bio-Herbal Pvt. Ltd., Gate No.37, Jawalke, Dindori, (10th Mail, Ozar), Tal Dindori, Dist-Nashik, Maharashtra-422206 mutually agree the terms & conditions.

3. General Terms of MOU:

The terms and conditions are as follows:

- 1. This MoU shall be operational upon signing and will have initial duration of 1 (One) year that is from 5th September 2018 to 4th September 2019 All activities conducted during these dates within the vision /objects of joint collaboration will be deemed to fall under this MoU.
- 2. In order to carry out and fulfil the aims of this MOU, each party to appoint an appropriate person(s) to represent its organisation and to coordinate, implementation of activities. Full names, designations, mobile numbers, Email Ids of each persons will be incorporated in this MOU.
- 3. There is no financial cost; liability in any manner whatsoever is involved in this MOU from both the parties. No right/title/interest in any manner will be created in the either of college properties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's and teacher's benefit at large.
- 4. Each party agrees that it shall not, at any time, after executing the activities of this MOU, will disclose any information without mutual consent.
- 5. All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email followed by Registered Post A/D to the other party.
- 6. In order to promote Academic and Research co-operation between the students and faculty of both the institutes, it is agreed that the areas like Academic activities, Placements, Joint collaborative research activities and Students practicalsetc. of co-operation should be developed.
- 7. It is agreed between two institutes will participate / undertake the above mentioned activities with prior information from the Head of both institutes.
- 8. Other common activities that could help to enhance co-operation, such as joint seminars, field visits, awareness programme, exhibitions etc.
- 9. The data obtained jointly by research workers on mentioned area will be the property of both the institutes and due credit should be given to individuals or institutes involved. Research workers of both institutes will be allowed to present and publish research work with the permission of Institutes, which will be furnished by mutual consent.

Page 2 of 2

- 10. This MOU will be further extendible by 1(One) year, at the mutual consent of both parties on further mutually agreed terms.
- 11. The term of this agreement may be amended at any time by mutual written consent of the parties.
- 12. Either company or Institution may terminate this agreement by giving prior notice to other institution any time in the study period if desired. In case of termination, the academic programme of the students currently enrolled should not be affected.
- 13. Any addendum to this MOU shall be in writing & signed by both the parties. Herewith both the parties confirm that a provision in this MOU does not go against the rules and regulations of the Government policies. Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU.

Hence the memorandum of understanding is signed.

Vide this MOU both the parties agree for the same with mutual consent.

IN WITNESS WHEREOF, the parties hereto have executed this MOU on -----

Signature moreshpandz	Signature Ramnalh
Prof. Dr. (Mrs.) M. D. Deshnande	Dr. Ramnath Lagton
Principal, HPT Arts and RYK Science	Chief Executive Officer
College, Nashik, Maharashtra- 422005	Mabile No. 0800401540
Contact No. 9881059272	E mail doctor@krighidaata
Email- prinhptryknsk@rediffmail.com	L' man- doctor (a)Ki isindoots.com
	Signature / 1.
Signature Colline	Mun al
Dr. S.G. Auti	Mr. Madan Shinde,
Professor &Head,	H.R. and Plant Head,
Department of Botany	Krishidoot Bio-Herbal Pvt. Ltd., Gate
HPT Arts and RYK Science College, Nashik,	No.37, Jawalke, Dindori .(10 th Mail
Maharashtra- 422005	Ozar). Tal Dindori, Dist- Nashik
	Maharashtra-422206
Contact No. 9423080468	Contact No. 9970400016
autisanjay66@gmail.com	hrden@krishidoots.com
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Gokhale Education Society's	Krishidoot Bio-Herbal Pyt Ltd Cate
HPT Arts and RYK Science College.	No.37, Jawalke Dindori (10 th Mail
Nashik, Maharashtra- 422005	Ozar) Tal Dindori Dist- Nashik
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Witnes	ses:
Signature	Signature Officiency
1) Dr. L. P. Sharma	1) Deenali Ramnath Jagtan
Vice-Principal & Head	1) Deepan Rammath Sugtap
Department of Microbiology	Krishidoot Bio-Herbal Pyt Ltd Gate
Contact No. 0860248575	No 37 Jawalke Dindori (10 th Mail
	(10.57, Jawaike, Dindori , 10 Man,
prowlad@gmail.com	Valoreshtre 422206 Mob. 9070400011
	Manarashtra-422200, Mob- 3370400011
Signature Magaqueed	Signature Alfred
2) Dr. P. U. Ratnaparkhi	2)Mr. Ramdas Khalkar
Co ordinator, IUAC & Vice-Principal.	Admin
Co ordinator, IQAC & Vice-Principal, HPT Arts and RYK Science College, Nashik	Admin Krishidoot Bio-Herbal Pvt. Ltd., Gate
Co ordinator, IQAC & Vice-Principal, HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Mobile No. 9823016230	Admin Krishidoot Bio-Herbal Pvt. Ltd., Gate No.37, Jawalke, Dindori .(10 th Mail,
HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Mobile No. 9823016230	Admin Krishidoot Bio-Herbal Pvt. Ltd., Gate No.37, Jawalke, Dindori ,(10 th Mail, Ozar), Tal Dindori, Dist- Nashik.
HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Mobile No. 9823016230 Email: pranavr1180@gmail.com	Admin Krishidoot Bio-Herbal Pvt. Ltd., Gate No.37, Jawalke, Dindori ,(10 th Mail, Ozar), Tal Dindori, Dist- Nashik, Maharashtra-422206, Mob- 9970400019
HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Mobile No. 9823016230 Email: pranavr1180@gmail.com	Admin Krishidoot Bio-Herbal Pvt. Ltd., Gate No.37, Jawalke, Dindori ,(10 th Mail, Ozar), Tal Dindori, Dist- Nashik, Maharashtra-422206, Mob- 9970400019
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Krishidoot Analytical Lab

Tteg Nornayina/Nathk/2117/2010/1) Gar 17, 10th Mall (Orar Mig), Iawallic Dindorf/ful Dindorf/Ilio/Asabik-421, 106, Maharashira, India,

CERTIFICATE

Date: 30/06/2019

entifield contexit

This is to certify that Miss. Patit Pratikshn Blugwat a student of "H.P.T Arts & R.Y.K Collage of Science" was deputed in our Laboratory from

12 Jun 2019 to 30 June-2019 for getting working experience in

Agro base Industry and Lab Also.

Assigned to her very sincerely & honestly, she might have gained well

Knowledge during the period.

She well known about

- 1. Atomic Absorption Spectrophotometer
- 2. Visible Spectrophotometer
- 3. Titrimetric Analysis
- 4. And other instruments

We found she is a sincere and hard worker. Our best wishes for Future.





Krishidoot Analytical Lab

Ph: 02557:279275 Mob. 9970400012 Web : www.krishidouts.com

Gat 37,10th mall (Ozar Mig).Jawalke Dindori,Tal-Dindori,Dist-Nashik-422 206, Maharashtra, India,

KRISHIDOOT BIO-HERBALS

TO WHOMSOEVER IT MAY CONCERN

This is hereby affirmed that Mr./Ms. Madhuri Shewale has accomplished his/her one month summer training program from Krishidoot Bio-Herbals, Nashik. He/she carried out his/her training from the Biofertilizer and Biocontrol Unit and his/her area of training covers exposure to various subjects such as microbiology, plant pathology and biotechnology. He/she performed very interesting sort of research work under title "Determining Growth of VAM Fungi in Maize Root System". During his/her training tenure he/she found sincere and hardworking, which may help him/her building his/her career in this exciting field of science.

We, Krishidoot Bio-Herbals wish him/her great success in his/her life ahead.

mt21. Authorized signat

Www.krishidoo

Date: 17/07/2019

nio@krishidoots.com

91 8600028508



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PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

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Date :

Date: 16/01/2020

Guest: Principal V.N. Suryavanshi Chief guest: Raghuveer Adhikari Sir Rupali Kulkarni Madam Dr. K. J. Shivade (HOD, Economics) Teaching Faculty: Prof. Manoj Giram Prof. B.S. Pawar Prof. Jayshree Kadam Prof. Honashree Patil

Chief guest elaborated following objectives of the club:

- 1. To make aware/literate students in the Share market, Economic literacy
- 2. To give training to the students on Economic literacy through SWS Financial Solutions.

Principal Suryavanshi sir guided the students regarding economic literacy awareness and it requirements in the present time. The coordination of the program has been done by Prof. Honashree Patil and a vote of thanks was performed by Prof. Manoj Giram.



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

FINANCIAL LITERACY CLUB

Date:-16/01/2020

INAUGARAL FUNCTION

Sr.N	o Name Of The Student	Class With Department	WhatsApp Mob. No.	Signature
1	Kohit Singh Latter	L (Economics	9156563471	E.tor
2	Sagar Lajput	(Economic (Economic	\$ 85520 3772	- Film.
3	Sayale . D. Patil	Economice	8806155323	Safet
4	Shradeba Rajput	CECONOMICS	7769835798	Fother
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6.	Rupali R. Shinde.	MA Parti	9730325969	Per-
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2.	Vandona K. Prajapati	MAIL His	155842800	Dausbury
. 1	Manisha Rampayun Nivankad	MAD His	8421556314	Quinter
•	Vinay Kumar Sharmen	MAIHIN	8055114173	lar
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FINANCIAL LITERACY CLUB

Date:-16/01/2020

INAUGARAL FUNCTION

Sr.No	Name Of The Student	Class With Department	WhatsApp Mob. No.	Signature
20	And Hirrey's Reutherd	E conomics	9767131506	Much
21	Joshav Rahul Somnat	MAI	9307591248	Sheel
22	Shrikant siterom mihundko	MAI	7066598700	delon
23	Padri stroesh khatela	Economics	7066339587	Telansar
24.	Shule Ganesh Ramputh	(Ceonomics)	9075872017	Chohulg
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FINANCIAL LITERACY CLUB

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Report of lecture on Central Government Scheme for students under the Financial Literacy Club

The lecture was taken by Ms. Rupali Kulkarni, Director of the SWS Financial company on 01/02/2020.

She has elaborated different Central Government Scheme for the students. And how those schemes are working in different education streams. Which scheme can be useful for the students. In the lecture mostly focused on some important schemes like Ayushmaan Bharat, Education Scheme through Internet. Also given training by practical.

The coordination of the program has been done by Prof. Honashree Patil and a vote of thanks was performed by Prof. Manoj Giram.



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

FINANCIAL LITERACY CLUB

Date:-01/02/2020

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FINANCIAL LITERACY CLUB

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FINANCIAL LITERACY CLUB

Date:-01/02/2020

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Report of Magic liquid fund under the Financial Literacy Club

The lecture was taken by Ms. Rupali Kulkarni, Director of the SWS Financial company on 15/02/2020.

She has elaborated Funds and Liquid Funds. What is the actual meaning of the Liquid in concern of the Economy? How the liquid fund can be profitable in different situations of the share market. Different companies invest liquid funds in the share market. Ms. Rapali Kulkarni also exhibited a practical session on the liquid fund and its related websites.

The coordination of the program has been done by Prof. Honashree Patil and a vote of thanks was performed by Prof. Manoj Giram.



HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

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Gokhale Education Society's HPT Arts RYK Science College, Nashik Department of Economics Financial Literacy Club Session - 4 UNION-BUDGET-2020 Date: -06002

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Gokhale Education Society's HPT Arts RYK Science College, Nashik Department of Economics Financial Literacy Club UNION BUDGET 2020

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Permanently Affiliated to Savitribai Phule Pune University (ID No.: PU/NS/AS/001(1924) NAAC Re-Accredited: 'A' Grade | ISO 9001:2015 Certified | Best College award by SPPU 2019-20

Sr. no.	Name of the collaborating agency/ institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboratio n /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
	Rayat Shikshan Sanstha's Abasaheb Marathe's Arts, Science and Commerce College, Rajapur, Dist. Ratnagiri	2019-24	1	2020	<i>Eleocharis equisetina</i> (Cyperaceae) New Distribution record (Research collaboration)
			2	2020	<i>Lepidagathis ushae</i> : a new species of Acanthaceae from the lateritic plateaus of the Konkan region, Maharashtra, India (Research collaboration)
			3	2020	<i>Pinda shrirangii</i> , a new elegant species of Apiaceae from the northern Western Ghats, India (Research collaboration)
			4	2020	Floristic diversity of Anjaneri Hills, Maharashtra, India (Research collaboration)
			5	2020	Karyomorphology of <i>Senecio</i> <i>hewrensis</i> (Asteraceae): An Endemic Species from India (Research collaboration)

List of the Activities conducted under MoU



INCIPAL & RYK (SC.) COLLEGE T (ARTS)



Outward No. 489/2018-19

Date: 17 01/2019

Memorandum of Understanding

This memorandum is singed between the Rayat Shikshan Sanstha's Abasaheb Marathe Arts & New Commerce, Science College Rajapur, Dist. Ratnagiri-416702 (Maharashtra).

and

s. Rathag

Gokhale Education Society's HPT Arts and RYK Science college, Nashik-422005 (Maharashtra) for working in association with each other for next five years.

It is agreed to conduct the following activities jointly,

- 1) Research collaboration
- 2) Guest lectures of faculties
- 3) Training to the students

The college will provide the infrastructures and human resources.

Allunung

Dr. Arun. N. Chandore Chairman, Research and extension committee

Principal A.M.A.& N.C.S.College Rajapur(V.Gothne)Dist.Ratnagiri

PRINCIPAL HPT (ARTS) & RYK (SC) COLLEGE NASHIK-5

Dr. Sanjay G. Auti Head, Department of Botany Department of Botany HPT Arts & RYK Science College NASHIK 422 005



RESEARCH NOTES

(I)

Eleocharis equisetina C. Presl (Cyperaceae) An extended distribution to the Andaman and Nicobar Islands and notes on its identity

As a part of taxonomic revision of genus *Eleocharis* R. Br. in India, floristic survey of Andaman and Nicobar Islands was undertaken. During this survey some specimens of *Eleocharis* were collected. After perusal of relevant literature (Clarke, 1893; Wadood Khan, 1999 and 2015) and critical analysis of specimens it was revealed that the specimens belong to *Eleocharis equisetina* C. Presl. A thorough scrutiny of literatures (Rao, 1986; Pandey and Diwakar, 2008) revealed that this species has so far not been recorded from Andaman and Nicobar Islands. Hence in present communication it is reported here as new record for Andaman and Nicobar Islands.

Description of species

Eleocharis equisetina C. Presl, Rel. Haenk. 1: 195. 1828; C.B. Clarke in Hook. f., Fl. Brit. India 6: 626. 1893; W. Khan in Sivadas & Mathew Biod. Tax. Conser. Fl. Pl. 309. 1999; W. Khan in Cyperaceae Western Ghats, West Coasts & Maharashtra 136. 2015. Pl. III, 12-14 & Pl. VII. 24-28.

Densely tufted, perennial herb with slender rhizome, stolon ca. 20 cm long and 1-3 mm thick, pale yellowish

to golden brown. Culms erect, 30-100 cm tall, ca. 1.0-3.5 mm diameter, terete, transversely septate, not much compressed when dry, sheath dark purple with triangular teeth on oblique mouth. Spikelets cylindrical, 20-45 × 2.0-3.5 mm, many flowered. Glumes 5.0-5.5 × 2.8-3.4 mm, membranous, obtuse, midrib distinct, upper margin narrowly hyaline, straw coloured. Perianth bristle 6-7, barbed, free at the base, minutely throughout retrorsely barbed, subequal, as long as to longer than nut. Stamens 3. Style ca. 4 mm long, conical at base, divided into three stigmas, persistent style base. Nut turgidly biconvex, obovoid to globose, 1.8-2.0 × 1.2-1.5 mm, pale yellow-brown; surface cells minute, isodiametric, arranged in numerous vertical rows (Fig.1).

Phenology

Flowering and Fruiting: October - January.

Habitat: *Eleocharis equisetina* C. Presl, grows in natural ponds along road side in association with *Ceratopteris pteridoides, Hygrophila schulli, Limnocharis flava, Rotala* sp., *Xyris indica,.* etc.



Fig. 1: Eleocharis equisetina C. Presl, A. Habit; B. Culm; C. Spikelets; D. Glume (outer surface); E. Glume (inner surface); F. Nuts.

INDIAN® FORESTER

Distribution: INDIA: Maharashtra and Andaman and Nicobar Islands.

Specimens Examined: Andaman and Nicobar Islands; South Andaman, on the way of Wandoor, 11.01.2014, *A.N. Chandore* 1902 (SUK).

Note: Clarke (1893) remarked that *Eleocharis equisetina* is just a variety of *E. dulcis*, while Kern (1974) regarded it as conspecific to the *E. dulcis*. However, *Eleocharis equisetina* is very similar to *E. dulcis* but differ from it by the characters; 1) stem not compressed when dry (as against stem compressed in *E. dulcis*), 2) glumes with rounded apex (as against acute apex in *E. dulcis*) and 3) perianth bristle up to one and half times longer than the nut (as against more than three times longer in *E. dulcis*).

Blake (1939) and Wilson (2015) are in favour of retaining the specific status of *E. equisetina* because of its distinctness. On the basis of the characters observed during present study authors also came to similar conclusion that *Eleocharis equisetina* is a distinct species.

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Lepidagathis ushae: a new species of Acanthaceae from the lateritic plateaus of the Konkan region, Maharashtra, India

D. B. Borude^{1,2}, P. D. Natekar^{1,2}, K. V. C. Gosavi³ & A. N. Chandore^{1,2}

Summary. A new species, *Lepidagathis ushae* Borude, Gosavi & Chandore from the lateritic plateaus of the Konkan region, Maharashtra, India, is described and illustrated. *Lepidagathis ushae* sp. nov. is closely related to *L. keralensis* Madhus. & N.P.Singh but differs in its cylindrical stem, pubescent leaves with 4 - 5 pairs of lateral or secondary nerves, spike c. 7 cm long with 7 - 15 flowers, pedicellate flowers, and pyramidal capsules with a single seed. It is restricted to an area of about 30 km² and should be considered Critically Endangered (CR, B1b (iii, v)) according to IUCN (2017) categories and criteria.

Key Words. Coastal plateaus, endemism, taxonomy.

Introduction

The genus *Lepidagathis* Willd. (Acanthaceae: Barlerieae) (McDade *et al.* 2008) is distributed in tropical and warmer regions of the world, with c. 110 species (Mabberley 2017). The genus is characterised by flowers that are positioned in the axils or arranged in terminal heads or spikes that are often 1-sided or sometimes fascicled; usually conspicuous bracts; bracteoles that are usually smaller than bracts; a calyx with 4 - 5 unequal parts; a small two-lipped corolla with four didynamous stamens attached at the base of the throat and included within the tube; and a recurved style with capitellate stigma and hairy seeds. *Lepidagathis* is represented in India by c. 33 taxa, following Karthikeyan *et al.* (2009), Jithin & Jose (2017) and Natekar *et al.* (2019).

During an investigation of plant diversity in the Konkan region of Maharashtra, the current authors collected some interesting specimens of Lepidagathis from lateritic plateaus of the Ratnagiri and Sindhudurg districts. After critical analysis of Lepidagathis specimens in the following herbaria: BSI, CAL, DRC, K, PDL, SUK (acronyms according to Thiers 2018, continuously updated) and perusal of relevant literature (Cooke 1958; Dhatchanamoorthy et al. 2017; Hooker 1892; Jithin & Jose 2017; Kolte et al. 2016; Madhusoodanan & Singh 1991; Natekar et al. 2019; Pandurangan & Nair 1994; Remadevi & Binoj Kumar 2008), the specimens were found not to match any known species of Lepidagathis. Detailed morphological studies of specimens of Lepidagathis species revealed that the species from Maharashtra is allied to

Lepidagathis keralensis Madhus. & N.P.Singh from Kerala. Through comparison with the protologue and specimens of *L. keralensis* from the herbarium of the Royal Botanic Gardens, Kew (*Madhusoodanan &* Jayakumar K 11868 (K); *Madhusoodanan &* Swarupanandan CU 13451 (K); Sebastian CALI 1499 (K)), the unknown species is easily distinguished by several morphological characters (Table 1). Therefore, it is described and illustrated here as a new species, Lepidagathis ushae (Figs 1 – 4).

Taxonomic Treatment

Lepidagathis ushae Borude, Gosavi & Chandore sp. nov. Type: India, Maharashtra, Ratnagiri, Rajapur, Hativale, 16°37.234'N, 73°32.239'E, 200 – 220 m, 3 March 2018, D. B. Borude & A. N. Chandore 430 (holotype CAL!, isotype BSI!, K!, SUK!).

http://www.ipni.org/urn:lsid:ipni.org:names:77206327-1

Perennial monocarpic, procumbent, prostrate, rigid *herbs. Rootstock* woody; stem creeping c. 2 m long, whitish, cylindrical (greenish and angular in vegetative state), young branches pubescent, rooting near base, nodes swollen, internode c. 5 cm long. *Leaves* small, sessile, opposite, c. $1.5 - 2.0 \times 0.5 - 0.7$ cm long, oblong-lanceolate, rigid, recurved at apex, spinose-pointed, pubescent on both sides, lateral nerves 4 - 5 pairs, entire at margins. *Inflorescences* terminal spike. *Spike* 5 - 7 cm long, 7 - 15 ascending flowers. *Flowers* pedicellate; c. 1.5 cm long, pinkish. *Bracts* $0.7 - 0.9 \times$

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Characters	L. keralensis	L. ushae sp. nov.
Stems	quadrangular, more or less winged, always glabrous	cylindrical (greenish and angular in vegetative), young branches pubescent
Leaves	glabrous, 1 – 2 pairs of nerves, acute or blunt-acuminate at apex	pubescent, 4 – 5 pairs of nerves, recurved, spinose-pointed at apex
Spikes	c. 2 cm long, 2 – 5-flowered	c. 7 cm long, 7 – 15-flowered
Flowers	sessile	pedicellate
Corolla	without horizontal pink striations	with horizontal dark pink striations throughout
Lower lip of corolla	divided into 3 unequal lobes; mid lobe broader than lateral lobes	deeply divided into 3 equal lobes
Ovary discs	annular shaped	flat-bowl shaped
Capsules	conical; two seeds	pyramidal; one seed
Seeds	oblong, flat, obtuse at apex; soft hairy	deltoid to ovoid, acute at apex; yellowish to golden hairy

Table 1. Comparison of diagnostic characters for separating *Lepidagathis keralensis* Madhus. & N.P.Singh and *L. ushae* Borude, Gosavi & Chandore.

0.2 - 0.3 cm long, oblong-ovate, glandular hairy, sharply spinous pointed, 5-prominent nerves, margin entire. Bracteoles 2, 6.0 - 8.0 × 1.5 - 2.0 mm long, oblong-lanceolate, 3-nerved, glandular hairy, spinous pointed. Calyx 5-partite, glandular hairy, lobes unequal, spinous pointed, margin entire, persistent; outer segments 3, unequal; one large $10 - 12 \times 2.5 -$ 3.0 mm long, ovate-lanceolate, 5 - 7 nerves, twice as broad as either of the other 2; other 2 small $8.0 - 9.0 \times$ 1.3 - 1.5 mm long, lanceolate, 3-nerved; inner segments 2, equal $7.0 - 8.0 \times 1.2 - 1.4$ mm long, linear-lanceolate. Corolla 1.0 - 1.2 cm long, pubescent outside, pinkish, deeply 2-lipped; upper lip c. 3 mm long, obtusely rounded, shortly 2-toothed, with horizontal pink striations throughout, dark transverse lines on the inner side; lower lip c. 3.5 mm long, deeply divided into 3 equal lobes; lobes c. 3 mm long, oblong, rounded or obtuse at apex, glabrous, pink to white. Stamens 4, didynamous; filaments c. 4 mm long, glabrous; anthers dorsifixed, hairy, reddish, dehiscing through longitudinal slit. Ovaries compressed ovoid, c. 1.5 mm long; ovary disc flat bowl-shaped, glabrous; styles slender, c. 9 mm long, whitish, hairy glandular lower half part; stigmas capitate. Capsules pyramidal, compressed, c. 6 mm long, apex at pointed, brownish to golden, glabrous. Seeds 1, c. 4 mm long, deltoid to ovoid, faintly 5-veined on surface, acute at apex, with yellowish to golden hygroscopic hairs. Figs 1 - 4.

RECOGNITION. Lepidagathis ushae sp. nov. is closely allied to *L. keralensis* but it differs in its cylindrical stem (angular in vegetative state) (vs quadrangular, more or less winged), pubescent leaves with 4 - 5 pairs of lateral or secondary nerves and a spinose-pointed, recurved apex (vs leaves glabrous with 1 - 2 pairs of lateral nerves and an acute or bluntly acuminate apex); inflorescence spike c. 7 cm long with 7 - 15 flowers (vs spike c. 2 cm long with 2 - 5 flowers);

pedicellate flowers (vs sessile flowers); pyramidal capsules (vs conical); and seed 1, deltoid to ovoid; yellowish to golden hairy (vs. seeds 2, oblong, flat; soft hairy). Detailed differences between *Lepidagathis keralensis* and *L. ushae* are listed in Table 1. Figs 1 - 4. **DISTRIBUTION**. India, Maharashtra. *Lepidagathis ushae* is rare on lateritic plateaus in the Ratnagiri and Sindhudurg districts of the Konkan region.

SPECIMENS EXAMINED. INDIA. Maharashtra: Ratnagiri, Rajapur, Hativale, 16°37.234'N, 73°32.239' E, 200 – 220 m, 3 March 2018, *D. B. Borude & A. N. Chandore* 430 (holotype CAL; isotype BSI, SUK); Padave village, 12 Feb. 2019, *A. N. Chandore* 1680 (SUK). Jaitapur village, 15 Feb. 2019, *P. D. Natekar* 200 (SUK).

HABITAT. Lepidagathis ushae grows on lateritic plateaus of low altitude in association with Eriocaulon eurypeplon Körn., Rungia crenata T.Anderson, Lepidagathis lutea Dalzell, Dimeria woodrowii Stapf and Glyphochloa acuminata (Hack.) Clayton.

CONSERVATION STATUS. The extent of occurrence of *Lepidagathis ushae* is estimated to be less than 30 km² of the Adivare, Hativale and Jaitapur areas of Ratnagiri district, and the Devgad & Kunkeshwar areas of Sindhudurg district. Natural and anthropogenic activities, including forest fires and extensive mining, result in severe threats to this species. It is assessed here as Critically Endangered (CR, B1b (iii, v)) (IUCN 2017).

PHENOLOGY. Flowering February – March; fruiting March – April.

ETYMOLOGY. The species is named in honour of Dr Usha Shrirang Yadav, Kolhapur, Maharashtra, India for her valuable contributions to the cytology and taxonomy of the plants of the Western Ghats.

NOTE. Lepidagathis ushae sp. nov. is monocarpic and its flowering period is only 15 - 20 days. Lateritic plateaus are a distinct geographical feature of the Konkan region of Maharashtra. Short-lived species of summer vegetation are usually neglected and missed by botanists because they complete their life cycle over such a



Fig. 1. Lepidagathis ushae. A, B & C flowering spikes; D lower lip of corolla (outer side); E upper lip of corolla (outer side); F lower lip of corolla (inner side); G upper lip of corolla (inner side).



Fig. 2. Lepidagathis ushae. A habit (in monsoon season); B habit (in summer season); C inflorescence; D leaves (upper and lower side); E flower; F bract; G bracteoles; H calyx; J stamens; K ovary with style & stigma; L capsule; M seed.



Fig. 3. Lepidagathis ushae. A habit; B leaves (upper and lower side); C flower; D bract; E bracteoles; F calyx; G stamens; H ovary with style & stigma; J capsule; K seed. DRAWN BY NILESH MADHAV.



Fig. 4. Transverse section of the stem of Lepidagathis ushae.

short period. This may be the reason why *L. ushae* has been overlooked previously.

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NORDIC JOURNAL OF

Research

Pinda shrirangii, a new elegant species of Apiaceae from the northern Western Ghats, India

Kumar Vinod Chhotupuri Gosavi, Nilesh Appaso Madhav, Devidas Bhausaheb Borude and Arun Nivrutti Chandore

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Subject Editor and Editor-in-Chief: Torbjörn Tyler Accepted 21 April 2020 Published 18 July 2020 A new species, *Pinda shrirangii* Gosavi & Chandore, is described and illustrated from a high-elevation region of northern Western Ghats, India. The new species is closely allied to the only other species in the genus, *Pinda concanensis* (Dalzell) P.K.Mukh. & Constance which was also described from the northern Western Ghats of Maharashtra state of India. Coloured photographs and illustrations are provided to facilitate the identification.

Keywords: Apiaceae, endemism, high elevation, Maharashtra, monotypic, *Pinda*, taxonomy

Introduction

The family Apiaceae has a cosmopolitan distribution and is particularly well represented in the north temperate and tropical region. It comprises ca 431 genera and 3700 species (Mabberley 2017). About 68 genera and 240 species of Apiaceae are reported from India and among them 25% species are endemic to the country (Mukherjee and Constance 1993). In India, Apiaceae comprises six endemic genera and all of them are monotypic. Among them only one, Kedarnatha P.K.Mukh. & Constance, is reported from Himalaya (Mukherjee and Constance 1993) while the others namely, Karnataka P.K.Mukh. & Constance, Pinda P.K.Mukh. & Constance, Polyzygus Dalzell, Sivadasania Mohanan & Pimenov and Vanasushava P.K.Mukh. & Constance have been found in the Western Ghats (Gosavi et al. 2016). Pinda concanensis (Dalzell) P.K.Mukh. & Constance is restricted to the northern Western Ghats and was segregated from the genus Heracleum L. based on the characters of outer petal of marginal flowers dilated, showy, unwinged lateral ribs of mericarp, slender and not at all clavate vittae extending up to base of mericarp, discontinuous sclerenchyma layer at seed cavity, and dorsal surface of endosperm grooved under vittae (Mukherjee and Constance 1986a).





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Table 1. Comparison between Pinda concanensis (Dalzell) P.K.Mukh. & Constance and P. shrirangii Gosavi & Chandore sp. nov.

Characters	Pinda concanensis	Pinda shrirangii
Habitat	grows on plateaus to low terrain region at high elevation	grows on steep to hanging rock at high elevation
Leaves	10–40 cm, ternate-pinnate or bipinnate	20–95 cm, ternate to bi-ternate
Leaflet lobes	3–9 cm, ovate-lanceolate to ovate, mostly acute at apex	5–20 cm, deeply tri-fid, pinnatifid, subulate to acuminate at apex
Involucre bracts	1–2.5 cm, sheath like with or without minute lamina lobes	3-5 cm, with sheathing trilobed prominent lamina
Involucel	3–7 mm, margins narrowly hyaline, entire	7–10 mm, margins broadly hyaline, ciliate
Rays	channel ribs hispid	all ribs hispid
Bracteoles	margin not hyaline, entire, nerves glabrous	margin hyaline, ciliate, nerves hairy
Pedicel	glabrous	hispid
Outer sepals	glabrous	few tubercles based hairs on margins
Marginal corolla	bilobed, lobes not overlapped	bilobed, lobes overlapped
Fruits	5–10 mm, oval to oblong, glabrous, rounded at apex and base	12–16 mm, elliptic to lanceolate, sparsely hispid to glabrous, acute to acuminate at apex and acuminate to attenuate at base

During field exploration in the northern Western Ghats of Maharashtra, the authors collected an interesting species of the genus *Pinda*. By first appearance this unknown species did not match with *P. concanensis*. After consulting relevant literature (Clarke 1879, Cooke 1903, Mukherjee and Constance 1986a, b, 1993) and the type of *P. concanensis* (K00065749!) we confirmed that we had found a new interesting species of *Pinda* with remarkable characters (Table 1). Hence, the species *Pinda* is described and illustrated here as a *Pinda shrirangii*.

Taxonomy

Pinda shrirangii Gosavi & Chandore, sp. nov. (Fig. 1-4)

A species related to Pinda concanensis (Dalzell) P.K.Mukh. & Constance but differing in its ternate to bi-ternate leaf (versus ternate-pinnate or bipinnate), leaflet lobes deeply tri-fid, pinnatifid, subulate to acuminate at apex (versus ovate-lanceolate to ovate, mostly acute at apex), involucre bracts with sheathing trilobed prominent lamina (versus sheath like with or without minute lamina lobes), involucel margins broadly hyaline, ciliate (versus margins narrowly hyaline, entire), all ray ribs hispid (versus only channel ribs hispid), bracteole margins hyaline, ciliate, with hairy nerves (versus margins not hyaline, entire, with glabrous nerves), pedicel hispid (versus glabrous), outer sepals with few tubercle-based hairs at both margins (versus glabrous), marginal corolla lobes overlapped (versus not overlapped), fruits elliptic to lanceolate, sparsely hispid to glabrous, acute to acuminate at apex and acuminate to attenuate at base, ribs not prominent (versus oval to oblong, glabrous, rounded at apex and base, ribs prominent).

Type: India, Maharashtra, Ahmednagar District, Harishchandragad, 19°24′13.57″N, 73°46′47.53″E, 1080 m a.s.l., 2 Sep 2019, K.V.C. Gosavi 5070 (holotype: CAL!, isotypes BSI!, K!, SUK!).

Etymology

The specific epithet is in honor of Emeritus Scientist Prof. (Dr.) Shrirang Ramchandra Yadav working at Department of Botany, Shivaji University, Kolhapur for his extensive contribution in the field of angiosperm taxonomy.

Description

Perennial, 40-180 cm tall, stout erect. Rootstock tuberous. Stem hollow, branched, glabrous to sparsely pubescent, with faint to dark nerves. Leaves ternate to bi-ternate, with dilated sheathing leaf base; sheath covering half diameter of stem, with 9-11 dark nerves; nerves hispid to tomentose; basal leaves 20-95 cm, petiolate; upper leaves sessile with prominent lamina; leaflets 5-25 cm, petiolulate, sparsely hairy, channelled; leaflet lobes deeply trifid, $5-20 \times 5-16$ cm, pinnatifid, subulate to acuminate at apex, with margins hairy, upper surface scabrous, lower surface scabrous on nerves. Inflorescence terminal and axillary compound umbels; peduncle 3-10 cm, slender, hairy. Involucre bracts 1 to 2, 3-5 cm, with sheathing trilobed lamina; lamina hairy, dentate to pinnatifid. Involucel 0-2, 7-10×3-4 mm, persistent, membranous, 1 to 3-nerved, margins hyaline, ciliate. Rays 10–15, unequal, 1.5–3 cm, 5-ribed; ribs densely hispid. Bracteoles 3–6, unequal, $4-8 \times 3-4.5$ mm, membranous, lanceolate-elliptic to ovate, 1-3-nerved; nerves scabrous; margins hyaline, ciliate. Umbellate 10-15 flowered. Flowers pedicellate; pedicel 3-4 mm, hispid to ciliate. Flower dimorphic; marginal flowers 5-8, hermaphrodite, with one marginal showy petal; central flowers usually male, regular. Sepals 3-4, persistent; outer 2 ca 1 mm, lanceolate to ovate, with few tubercle-based hairs at both margins; inner sepals 1-2, minute. Petals brilliant white, with reticulate veins; regular petals 1.0-1.5 mm, inflexed acute to acuminate at tip; marginal petals 6-8 mm broad, 3-5 reticulate nerved, bi-lobed; lobes overlapped. Style very minute. Stylopodium conical, massive. Carpophore bi-partite. Fruit elliptic to lanceolate, sparsely hispid, dorsally compressed, 12-16×5-8mm, acute to acuminate at apex, acuminate to attenuate at base; mericarp dorsally flattened, sparsely hispids on ribs; ribs prominent, rounded,



Figure 1. *Pinda shrirangii* sp. nov. (a–b). habitat, (c) plant growing on steep slopes of rock, (d) habit, (e) single umbel. Photographs by K. V. C. Gosavi.



Figure 2. Comparative habit of *Pinda shrirangii* sp. nov. and *P. concanensis*. (a) habit of *P. shrirangii*, (b) habit of *P. concanensis*. Photographs by K. V. C. Gosavi.

without wings; lateral ribs slightly broader, without wings; vittae prominent; commissural vittae 4 to many; vallecular vittae 8–12; dorsal surface of the endosperm grooved under vittae.

Phenology

Flowering and fruiting from August to October.

Distribution

As far as known the species distribution is less than 2 km². It grows on steep and hanging rocks making it difficult to count the exact number of individuals in the population, but about 200 individuals were seen in the type locality.

Local name

Pandada or Pandai (Marathi).

Ecological note

Pinda shrirangii grows on steep and hanging rocks at around 1080 meter elevation associated with *Arundinella pumila*

(Hochst.) Steud. & Bor, Begonia crenata Dryand., Impatiens acaulis Arn., Sonerila scapigera Hook., Tripogon lisboae Stapf.

Note on the genus Pinda

The genus *Pinda* differs from the genus *Heracleum* by the characters given in the Introduction and the genus has until now been monotypic with *Pinda concanensis* as the only species. The variety *Heracleum concanense* var.? *stocksii* C.B.Clarke was described based on Stock's collection housed at K, but the type specimen (K000695927!) exactly match with type of *Polyzygus tuberosus* Walp., therefore, it is subsumed under *P. tuberosus. Heracleum grandiflorum* Dazell & A.Gibson was described based on a single herbarium specimen (K000685748!) but was later merged with *Pinda concanensis*.

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Figure 3. Comparative account of *Pinda shrirangii* sp. nov and *P. concanensis*. *P. shrirangii* sp. nov. (a) basal leaf, (c) single umbelet, (e) ray, (g) bracteole, (i) single marginal flower showing abnormal bi-lobed corolla, (k) outer hairy sepals, (m) fruit, (o) T.S. of fruit. *P. concanensis*. (b) basal leaf, (d) single umbelet, (f) ray, (h) bracteole, (j) single marginal flower showing abnormal bi-lobed corolla, (l) outer glabrous sepals, (n) fruit, (p) T.S. of fruit. Photographs by K. V. C. Gosavi.



Figure 4. *Pinda shrirangii* sp. nov. (a) habit, (b) bracteole, (c) back of marginal flower, (d) central regular flower, (e) pedicel with outer calyx lobes, (f) fruit, (g) T.S. of mericarp. Drawn from K. V. C. Gosavi 5070 by N. A. Madhav.

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Floristic diversity of Anjaneri Hills, Maharashtra, India

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Abstract: High altitude plateaux are found throughout northern Western Ghats. These plateaux harbor a great diversity of monsoon flora and endemism but are highly neglected due to the seasonality and harsh climatic conditions. Anjaneri Hill is an important rock outcrop in northern Western Ghats. It is the type locality of *Ceropegia anjanerica*. As an attempt to make a floristic inventory of an important area, a preliminary study was undertaken. A total of 385 flowering plants from 68 families have been reported from Anjaneri protected area in the present study, of these 114 are endemics. Out of these 114 species, 81 are endemic to India while 33 taxa are endemic to the Western Ghats. Anjaneri rock outcrop shows great floral diversity due to varied microhabitats. The observations on phenology and adaptive traits were recorded. The data on geology and geomorphology is presented in order to understand the geological nature of the rock outcrop. Intensive study on varied microhabitat is needed for the documentation of floral diversity existing on the Anjaneri Hill.

Keywords: *Ceropegia anjanerica*, endemic species, flowering plants, microhabitats, Nashik District, phenology, plateau, protected area, rock outcrop, Western Ghats.

Marathi Abstract: उत्तर-पश्चमि घाटामध्ये जास्त उंचीची पठारे खूप मोठ्या प्रमाणात आढळतात. पावसाळ्यात त्यांवर वपूिल प्रमाणात वनस्पतींची वविधिता आढळते. तेथे प्रदेशनष्ठिठ वनस्पतींची संख्याही जास्त आहे. येथे वर्षाभरात ठरावकि ऋतूंमध्ये वनस्पती आढळून येतात आणी येथील प्रतकूिल हवामानामुळे ही पठारे अभ्यासकांकडून तशी दुरलक्षति झावेली आहेत. अंजनेरी परवत हा उत्तर-पश्चमि घाटातील एक महत्त्वाचे खडकाळ पठार आहे. सेरोपेजयाि अंजनेरकिंग या प्रदेशनषिठ वनस्पतींची पहलिी नॉद येथे झाली आहे. अशा महत्त्वपूर्ण पठारावरील सपुष्प वनस्पतींचा अभ्यास करून 68 कुळातील एकूण 385 वनस्पतींची नॉद प्रस्तूत अभ्यासात केलेली आहे त्यातील 114 परजाती या परदेशनषिठ असून 81 वनस्पतीं भारतात आणी 33 परजाती या पश्चमि घाटापुरत्या परदेशनषिठ आहे. येथील वनस्पतीच्या वविधितेचे कारण आहे, सूक्ष्म अधविसांची वविधिता. या अभ्यासदरम्यान वनस्पतींना फुले येण्याचा कालावधी आणी अनुकूलन यावरील नरिक्षणे नोंदवली येलेली आहेत. भूवजिञान आणी भूगोलशासूतर यांच्या आधारे अंजनेरी परवताचे भौगोलकि वैश्वष्टित्य समजून घेऊन त्याची अभ्यास प्रमुल् माहती येथे सादर केलेली आहेत. भूवजिञान प्रत्ति या पत्रिक्र परेवाल केलेले जो हते. येथील वनस्पतीच्या वविधितेचे कारण आहे, सूक्ष्म अधविसांची वविधिता. या अभ्यासदरम्यान वनस्पतींना प्रत्वे मेण्याचा कालावधी आणी अनुकूलन यावरील नरिकेषणे नोंदवली येलेली आहेत. भूवजिञान आणी भूगोलशासत्र यांच्या आधारे अंजनेरी परवताचे भौगोलकि वैश्वषित्र्य समजून घेऊन त्याची अभ्यास करणे आहती येथे सादर केलेली आहे.

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INTRODUCTION

The Western Ghats are amongst well-known global hotspots recognized for its biodiversity and endemism (Daniels & Vencatesan 2008). Most conservation attention has been focused on the forests of the Western Ghats due to loss of plant species and intense habitat loss (Panigrahy et al. 2010). Southern Western Ghats shows great diversity of taxa especially trees and shrubs due to heavy rainfall, edaphic heterogeneities, and high mountain ranges, while the northern Western Ghats provides varieties of the unique habitats, e.g., forts, caves, cliffs, slopes, and plateaux which support diversity of herbaceous vegetation.

Northern Western Ghats also encompass higher plateaux or tablelands that have received less conservation attention (Porembski et al. 1994, 2000; Watve 2013), although studies suggest these ecological subsets of the Western Ghats mega-hotspot provide their own noteworthy and unique biological components. Many researchers have reported about the floral diversity of plateaux in northern Western Ghats. Report on two basaltic plateaux of northern Western Ghats has been provided by Rahangdale & Rahangdale (2014, 2018). Their documentation chiefly focuses on flowering plant diversity from Durgawadi Plateaux (600 taxa) and Naneghat Plateaux (249 taxa). Uncommon vegetation (Lekhak & Yadav 2012), a new species (Malpure et al. 2006; Malpure & Yadav 2009) and endemism (Joshi & Janarthanam 2004) were reported from lateritic plateaux.

Plateaux in Western Ghats lack proper substrate (soil) and exhibit extreme climatic conditions. Their environment usually shares a series of stressful characteristics, such as UV exposure, daily thermal variation, constant winds, high evapo-trasnspiration, low water retention, and impermeable soils (Porembski & Barthlott 2000). Plant communities of the plateaux are edaphically controlled and show adaptation for water accumulation, such as succulence Cyanotis concanensis, Ceropegia lawii, and poikilohydry, carnivory in response to the lack of nutrients (N, P, and S) in the soil and the presence of subterranean organs (bulbs, corms, tubers, and rhizomes) to overcome extreme temperature during summer. Despite the rich floral diversity and varied microhabitat, these plateaux are highly neglected, due to extreme conditions e.g., high temperature, altitude, and remote locations.

Watve (2007, 2010) reported that climatic and microclimatic (soil, rock, air, temperature, and humidity) conditions on rocky plateaux and their diurnal

variation affected the vegetation on the plateaux. The microenvironment of the rocky plateaux tend to be extreme, from xeric to water logged, highly acidic (4.5–6.0), and rich in organic carbon.

Soil moisture has been recognized as the primary determinant of plant phenology in the Western Ghats (Joshi & Janarthanam 2004), and the plant diversity on the plateaux is only apparent while monsoon moisture persists.

The present study was carried out to document the diversity of flowering plants of the Anjaneri rock outcrop. The data generated in this study will help in planning for conservation of endemic and threatened plants.

MATERIALS AND METHODS

Study area

Anjaneri Hill (19.919°N & 73.571°E) (Fig. 1, 2) is a basalt mesa, a flat-topped hill with steep cliff edges. It is one of a cluster of five hills, together known as 'Tryambak Range' of the northern Western Ghats. Anjaneri Plateau is located 20km west of Nashik, towards Tryambakeshwar. Anjaneri Hills is an ancient mountain pass, from the period of Yadava, Satvahana Kings (approximately 700 CE). Historical references are also found from the regime of Peshava.

The elevations of the adjoining peaks are less than the highest point on the plateau (1,300m). Anjaneri Hill is a reserved forest (RF) area and has been given the status of medicinal plant conservation area (MPCA) in 2009–2010 and reserve area conservation committee has been constituted (April 2017) for the conservation of endemic plants from the plateau.

Data collection

Extensive and repeated field surveys were carried out during 2010 to 2016 to cover all the seasons of the year. A comprehensive checklist of plants was prepared altitude-wise in order to understand the range of distribution of species, ecological variations, and types of adaptation. Occurrence of the taxa was recorded based on the visual observations during field work. During the field surveys, types of vegetation, habit, habitat, morphological characters, associated species, adaptation, and phenology were documented.

Plant specimens were collected and identified using Flora of Nashik (Lakshminarasimhan & Sharma 1991) and regional floras (Sharma et al. 1996; Singh & Karthikeyan 2000; Singh et al. 2001). The data on endemism has been taken from Singh et al. (2015). The species documented





Figure 1. The Anjaneri range and its surroundings.

are listed in Table 1 as per APG IV (2016).

Geology and geomorphological studies

The present study is based on the data collected from primary and secondary sources. Primary data was procured by visiting the study area. Secondary data were obtained through Survey of India topographical maps. In addition to these, quantification of a number of geographical features for the area under study were made possible by means of the analyses of digital elevation model (DEM) of ca. 30m resolution advance space borne thermal emission and reflection radiometer (ASTER) data. The digital elevation data was used to extract information with the help of standard procedures in ArcGIS 9.3 (Kale & Shejwalkar 2008; Dehbozorgi et al. 2010).

Geology

Geologically, the study area is underlain by horizontally bedded Cretaceous-Eocene Deccan volcanic basalts. It is a part of the Deccan Volcanic Province (DVP) covering 5×10^5 km² area of central and western India, ranks as one of the largest flood basalt provinces on Earth (Brown et al. 2011). The lava flows of the Anjaneri Plateaux belong to Kalsubai subgroup of DVP, although the details of the lava flows at Anjaneri Plateaux is not known. The Bramhgiri Hill (1,287m), located close to Anjaneri Plateaux, exposes a 620.5m thick pile of a few compound pahoehoe flows, varying 40–96 m in thickness and one 9m thick flow, which occurs at 716m level. The area under study is characterized by two prominent dykes, through which basaltic lava was intruded. The dykes appear in the form of lineaments that are zones of weakness.

Geomorphology

Geomorphologically, the highest point of Anjaneri Plateaux is 1,300m with an area of 5.7km². The maximum local relief of the plateaux is 660m to the south-west. The plateaux are bordered by high cliffs from almost all the sides. The lower slopes of Anjaneri Plateaux are concave in nature with semi-evergreen vegetative growth particularly in the form of trees. The profiles reveal that the Anjaneri area maintains the classical characteristics of the plateaux.

Climate: The Anjaneri Plateaux do not have any official or unofficial weather station. Therefore, it is not possible to describe the climate of the study area, however, some information is available for Tryambakeshwar, which is located close to the study area. The region experiences extreme weather, i.e., very hot summers and very cold winters. Summer and monsoon is a feature of the area. Therefore, the climate of the area is divided into three distinct seasons, namely, (a) summer season (March to May) are hot with a maximum average temperature reaching up to 40°C, (b) monsoon season (June to October) is likely to offer average annual rainfall around 2,000mm particularly on Anjaneri Plateaux, and (c) winter season (November to February) is mostly pleasant with a minimum and maximum temperature between 7°C and 34°C, respectively. It is likely to have higher temperatures on the top of the plateaux than the surrounding region particularly in the summer season. It is evident by occurrence of succulents like Ceropegia anjanerica, Drimia polyantha, Euphorbia khandallensis and the spinescent Lepidagathis cuspidata.

Ecosystem services

The steep hill slopes give rise to many cascades and streams that supply water to major dams like Vaitarana Dam and three minor reservoirs. At the end of monsoon, the plateaux have grass cover providing stuff for local cattle. Natural and man-made ponds are also present on the plateaux. The area has medicinal plant species and local people regularly collect these species. It has been declared as a medicinal plant conservation area (MPCA) by the forest department and special protection has been provided against exploitation.

Floristic composition

A total of 385 species are recorded from the Anjaneri Hills. These plants are distributed in 68 families: Poaceae (59), Leguminosae (48), Asteraceae (40), Acanthaceae (21), and Lamiaceae (15) are dominant families. These five families represent 183 species of the total flora. In comparison with lateritic plateaux like Kaas, Satara (41 endemics) (3.26km²) and Barki, Kolhapur (six endemics) (3.75km²) (Lekhak & Yadav 2012 and Shenai et al. 2013), and basaltic rock outcrops Durgawadi, Pune (150 endemics) (2.8793km²) (Rahangdale & Rahangdale 2018) and Naneghat, Junnar (seven endemics) (0.7524km²) (Rahangdale & Rahangdale 2014) Anjaneri outcrop (5. 6963km²) harbors 385 flowering plants of which 114 are endemic species. Endemism given for Kaas and Barki are restricted to the plateaux and not the whole area, while the endemics from Durgawadi, Naneghat, and Anjaneri are from entire area.

Anjaneri outcrop shows high endemism and commonly shared taxa are relatively low (31.21%) indicating that the Anjaneri outcrop is floristically and in terms of habitats is very diverse. It is the type locality of *Ceropegeia anjanerica* (Malpure et al., 2006) and supports varied habitats for many endemic plants (Table 1). The reason for the species richness and high endemism of Anjaneri outcrop might be in its geographical location, climatic conditions, specific basaltic nature, and high altitude. A few species which occur on Kaas, Barki, Dugarwadi, and Naneghat plateau, e.g., *Dipcadi ursulae, Aponogeton satarensis, Ceropegia jainii*, and *Eriocaulon epedunculatum* were not found in the present study area may be due to lack of required specific habitats.

Anjaneri rock outcrop shows three levels (flat areas) at 800–850 m, 1,150–1,200 m and 1,300m and large slopes. Each level and slope is unique in terms of soil deposition and water content. Basal level (800–850 m) has a good amount of soil and water, supported species from Lamiaceae (*Colebrookea oppositifolia*, *Pogostemon deccanensis*), Solanaceae (*Solanum anguivi*), and Asteraceae (*Senecio bombayensis*) and trees like *Mangifera indica*, *Terminalia tomentosa*, *Bridelia retusa*, *Syzygium cumini*, *Sterculia guttata*, *Schleichera oleosa*, and *Falconeria insignis*. Good populations of *Gloriosa superba* and *Paracalyx scariosus* were recorded.

Middle level (1,150–1,200 m) contains 1–1.5 cm of soil dominated by grasses like *Chrysopogon fulvus*, *Cymbopogon martini*, and *Dichanthium assimile*. A number of shallow water bodies are formed during the monsoon season which provide habitat for *Lindernia parviflora*, *Rotala rosea*, *Ammannia baccifera*, and *Hygrophila serpyllum*. At 1,100–1,150 m small tree cover occurs on the soil-rich areas of the plateaux. This cover includes plants like *Elaeagnus conferta*, *Ziziphus rugosa*, *Terminalia chebula*, *Trema orientalis*, *Acacia pennata*, and *Kydia calycina*. Little above the middle plateau (1,200m), a small natural pond exists. It supports hydrophytes like *Persicaria glabra*.

Uppermost level (1,250–1,300 m) shows large number of herbaceous, ephemeral flush and grasses. In some areas of this level little soil deposition occur, this area shows a large population of *Strobilanthes reticulata* and *Curcuma neilgherrensis*. Various taxa like *Polygala arvensis*, *Habenaria brachyphylla*, and *Haplanthodes verticellata* were associated with *Strobilanthes* population. The species like *Impatiens dalzellii* (Image 3H) (above 1,150m), *Drosera indica* (1,250m), *Crinum*



Image 1. Major habitat of Anjaneri Hill: A—Top elevation plateau | B—Middle elevation plateau | C—Slope | D—Steep and hanging rocks | E—Black boulders with seasonal stream | F—Seasonal pond at top plateau. © Dr. K.V.C. Gosavi.

latifolium (1,300m), *Ceropegia anjanerica* (1,300m), *Euphorbia khandallensis* (1,275m), *Sonerila scapigera* (Image 4G) (1,175m), *Cyathocline lutea* (1,300m) were reported. During monsoon a large number of small shallow puddles are formed, supporting herbaceous plants like *Pogostemon deccanensis*, *Eriocaulon tuberiferum*, *Exacum lawii*, and *Utricularia praeterita*. Apart from above habitats, rocky outcrops provide various habitats like boulders, exposed rock surfaces, small ephemeral pool, and soil covered areas.

Slopes of all three levels show variation in their species composition. Slope from middle to upper level were covered with a huge population of *Strobilanthes*

callosa, Chlorophytum glaucum, Pimpinella wallichiana, Lepidagathis cuspidata, Gynura bicolor, Alysicarpus bupleurifolius, Desmodiastrum racemosum var. rotundifolium, Smithia species and middle slope with various herbaceous plants like Commelina species, Neanotis foetida, Neanotis montholonii, Cynarospermum, and Canscora diffusa.

Study area shows dominance of lithophytes due to their greater ability to survive under disadvantageous environmental conditions (Porembski & Barthlott 2000). Due to their short life-cycle and high reproduction rate, they are well-adapted to extreme environments and high levels of disturbances. Most of the plants survive



Image 2. Seasonal changes of top plateau: A—Dried plants in the month of May | B—Dominated *Curcuma neilgherrensis* after first shower in the first week of June | C—Dominant *Habenaria grandifloriformis* in the first week of July | D—*Pinda concanensis, Senecio bombaiensis* appear in August | E—Mix population of many outcrops species appears in September | F—Outcrops species are drying from October to November. © Dr. K.V.C. Gosavi.

the dry spell as dormant seeds or tuber.

Due to the absence of large accumulations of soil over the plateaux little rainwater is stored, but most of the water is lost as runoff. The loss of water due to runoff is due to steep slopes.

Seasonal succession and phenology

Plant communities on the Anjaneri outcrop are gradually changing temporally with specific interval (approximately 10 days) due to changing environmental conditions. The growing season starts with the dominance of ephemerals and this is later replaced by perennials. Both the number of species and the number of individuals declined after a peak at the beginning of the growing season. Such seasonal or phenological phenomena with respect to basaltic plateaux in northern Western Ghats have been studied by Rahangdale & Rahangdale (2014, 2018) and lateritic plateaux by Joshi & Janarthanam (2004), Bhattarai et al. (2012) and Lekhak & Yadav (2012). Similar pattern to the one seen on the Anjaneri outcrop was observed by Lekhak & Yadav (2012) and Rahangdale & Rahangdale (2014). Based on the phenology of the plants four phases can be recognized: 1. The pre-monsoon phase (June–July) is characterized by the growth of grasses and ground orchids on the plateaux. The grass species which are quite common are Eragrostis unioloides, Isachne elegans, and Paspalum canarae var. fimbriatum along with Curculigo orchioides, Ceropegia lawii, Habenaria grandifloriformis, Arisaema murrayi, Crinum latifolium, and Curcuma neilgherrensis; 2. The monsoon phase (August-September) mainly geophytes such as Ceropegia anjanerica, C. media, Eriocaulon tuberiferum, Habenaria suaveolens, H. grandifloriformis, Hypoxis aurea, and members of the ephemeral vegetation such as Glyphochloa maharashtraensis, Fimbristylis lawiana, Utricularia spp., Murdannia nimmoniana, Eriocaulon spp., and Smithia hirsuta come in flowering. This is



Image 3. Endemic plants: A—Strobilanthes callosa Nees | B—Pancratium nairii Sasikala & Reema Kumari | C—Pinda concanensis (Dalzell) P.K. Mukh. & Constance | D—Ceropegia anjanerica Malpure, M.Y.Kamble & S.R.Yadav | E—Ceropegia media (Huber) Ansari | F—Frerea indica Dalzell | G—Arisaema murrayi (J.Graham) Hook. | H—Impatiens dalzellii Hook.f. & Thomson | I—Cyathocline lutea Law ex Wight. © Dr. K.V.C. Gosavi.



Image 4. Endemic plants: A—Adelocaryum malabaricum (C.B.Clarke) Brand | B—*Cyanotis concanensis* Hassk. | C—*Pogostemon deccanensis* (Panigrahi) Press | D—*Desmodiastrum racemosum* var. *rotundifolium* (Baker) A.Pramanik & Thoth. | E—*Indigofera santapaui* Sanjappa | F— Smithia purpurea Hook. | G—Sonerila scapigera Dalzell | H—Habenaria heyneana Lindl. | I—*Dichanthium armatum* (Hook.f.) Blatt. & McCann. © Dr. K.V.C. Gosavi.

	Plant species	Family	Location	
1*	Amorphophallus commutatus (Schott) Engl.	Araceae	MP, UP	
2	Ariopsis peltata Nimmo	Araceae	UP	
3\$	Arisaema murrayi (J.Graham) Hook.	Araceae	MP,UP	
4	Arisaema tortuosum (Wall.) Schott	Araceae	MP,UP	
5	Remusatia vivipara (Roxb.) Schott	Araceae	Slope between MP and UP	
6	Sauromatum venosum (Dryand. ex Aiton) Kunth	Araceae	UP	
7	Dioscorea bulbifera L.	Dioscoreaceae	Slope UP	
8	Dioscorea pentaphylla L.	Dioscoreaceae	Slope UP	
9	Gloriosa superba L.	Colchicaceae	BP	
10*	Dendrobium barbatulum Lindl.	Orchidaceae	MP	
11	Dendrobium herbaceum Lindl.	Orchidaceae	MP	
12\$	Dendrobium microbulbon A.Rich.	Orchidaceae	MP	
13\$	Habenaria brachyphylla (Lindl.) Aitch.	Orchidaceae	UP	
14\$	Habenaria foetida (Geyer ex Hook.) S.Watson	Orchidaceae	UP	
15\$	Habenaria foliosa A.Rich.	Orchidaceae	MP,UP	
16\$	Habenaria grandifloriformis Blatt. & McCann	Orchidaceae	UP, MP	
17\$	Habenaria heyneana Lindl.	Orchidaceae	BP, UP	
18\$	Habenaria suaveolens Dalzell	Orchidaceae	UP	
19	Curculigo orchioides Gaertn.	Hypoxidaceae	MP	
20	Hypoxis aurea Lour.	Hypoxidaceae	MP	
21	Crinum latifolium L.	Amaryllidaceae	UP	
22*	Pancratium nairii Sasikala & Reema Kumari	Amaryllidaceae	UP	
23	Agave americana L.	Asparagaceae	MP	
24\$	Chlorophytum borivilianum Santapau & R.R.Fern.	Asparagaceae	Slopes of foot hills	
25\$	Chlorophytum glaucum Dalzell	Asparagaceae	UP	
26*	Drimia polyantha (Blatt. & McCann) Stearn	Asparagaceae	UP	
27	Phoenix sylvestris (L.) Roxb.	Arecaceae	BP	
28	Commelina benghalensis L.	Commelinaceae	MP,UP, Slope MP,UP	
29*	Commelina paleata Hassk.	Commelinaceae	In shady places along slopes	
30*	Cyanotis concanensis Hassk.	Commelinaceae	Slope MP,UP	
31	Cyanotis fasciculata (B.Heyne ex Roth) Schult. & Schult.f.	Comelinaceae	Slope MP,UP	
32	Murdannia nimmoniana (J.Graham) Bole & M.R.Almeida	Commelinaceae	UP	
33*	Murdannia nimmoniana var. sahyadrica (Ancy & Nampy) Nandikar	Commelinaceae	In shady places along slopes	
34\$	Ensete superbum (Roxb.) Cheesman	Musaceae	MP	
35\$	Curcuma neilgherrensis Wight	Zingiberaceae	UP	
36	Eriocaulon heterolepis Steud.	Eriocaulaceae	UP	
37\$	Eriocaulon sedgwickii Fyson	Eriocaulaceae	UP	
38*	Eriocaulon tuberiferum A.R.Kulk. & Desai	Eriocaulaceae	UP	
39	Cyperus difformis L. Cyperaceae MP,UP		MP,UP	
40	Eleocharis atropurpurea (Retz.) J.Presl & C.Presl	Cyperaceae	MP,UP	
41\$	Fimbristylis lawiana (Boeckeler) J.Kern	Cyperaceae	MP,UP	
42	Kyllinga bulbosa P.Beauv.	Cyperaceae	MP,UP	
43	Pycreus flavidus (Retz.) T.Koyama	Cyperaceae	MP,UP	
44	Apluda mutica L.	Poaceae	Slopes	



Journal of Threatened Taxa | www.threatenedtaxa.org | 26 July 2020 | 12(10): 16295–16313

Auti et al.

	Plant species	Family	Location	
45	Arthraxon hispidus var. hispidus (Thunb.) Makino	Poaceae	MP	
46*	Arthraxon jubatus Hack.	Poaceae	MP	
47	Arthraxon lanceolatus var. lanceolatus (Roxb.) Hochst.	Роасеае	UP,MP	
48*	Arthraxon lanceolatus var. meeboldii (Stapf) Welzen	Роасеае	MP	
49	Arthraxon lancifolius (Trin.) Hochst.	Роасеае	MP	
50\$	Arundinella ciliata (Roxb.) Nees ex Miq.	Poaceae	UP	
51	Arundinella pumila (Hochst. ex A. Rich.) Steud.	Роасеае	UP, MP	
52	Chloris virgata Swartz	Роасеае	UP, MP	
53	Chrysopogon fulvus (Spreng.) Chiov.	Роасеае	UP,MP	
54	<i>Coix gigantea</i> Koen. ex Roxb.	Роасеае	MP	
55	Cymbopogon martini (Roxb.) Wats.	Роасеае	MP, UP	
56	Cynodon dactylon (L.) Pers.	Poaceae	MP,UP	
57	Dendrocalamus strictus (Roxb.) Nees	Poaceae	MP	
58	Dactyloctenium aegyptium (L) P. Beauv.	Poaceae	MP, UP	
59*	Dicanthium paranjapyeanum (Bhide) Clayton	Poaceae	UP	
60	Dichanthium annulatum (Forssk.) Stapf	Роасеае	MP, UP	
61*	Dichanthium armatum (Hook.f.) Blatt. & McCann	Poaceae	MP	
62	Dichanthium assimile (Steud.) Deshpande	Poaceae	MP,UP	
63	Dichanthium caricosum (L.) A.Camus	Poaceae	MP, UP	
64	Dichanthium odoratum Jain & Deshpande	Poaceae	UP	
65*	Dichanthium oliganthum (Hochst. ex Steud.) T.A.Cope	Poaceae	UP	
66	Digitaria ciliaris (Retz.) Koel.	Роасеае	UP	
67	Echinochloa colonum (L.) Link	Poaceae	MP	
68	Eragrostiella bifaria (Vahl) Bor	Poaceae	MP	
69	Eragrostis unioloides (Retz.) Nees ex Steud	Poaceae	MP	
70	Eragrostis viscosa (Retz.) Trin.	Poaceae	MP	
71	Euclasta clarkei (Hack.) T.A.Cope	Роасеае	MP	
72	Eulalia trispicata (Schult.) Henr.	Poaceae	MP,UP	
73\$	Garnotia arborum Stapf ex T.Cooke	Poaceae	MP, UP	
74	Garnotia tenella (Arn. ex Miq.) Jan.	Poaceae	UP	
75*	Glyphochloa maharashtraensis Potdar & S.R.Yadav	Poaceae	UP	
76\$	Glyphochloa forficulata (C.E.C.Fischer) W.D.Clayton	Роасеае	UP	
77	Heteropogon contortus (L.) P.Beauv. ex Roem. & Schult.	Poaceae	UP	
78\$	Indopoa paupercula (Stapf) Bor	Poaceae	UP	
79\$	Isachne elegans Dalzell	Poaceae	UP	
80\$	Isachne gracilis C.E.Hubb.	Poaceae	UP	
81	Ischaemum impressum Hack.	Poaceae	UP	
82	Ischaemum indicum (Houtt.) Merr.	Poaceae	MP	
83\$	Ischaemum raizadae Hemadri & Billore	Poaceae	UP, MP	
84	Jansenella griffithiana (C.Muell.) Bor	Poaceae	MP,UP	
85*	Jansenella neglecta S.R.Yadav, Chivalkar & Gosavi	Poaceae	MP,UP	
86	Oplismenus burmannii f. cristata (J.Presl) Hier. ex Peter	Poaceae	MP	
87	Oplismenus compositus (L.) P.Beauv.	Poaceae	MP	
88\$	Paspalum canarae var. fimbriatum (Bor) Veldk.	Poaceae	UP OT	
89	Pennisetum pedicellatum Trin.	МР /		
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Auti	et	al.	

	Plant species	Family	Location	
90*	Pogonachne racemosa Bor	Роасеае	UP	
91\$	Pseudanthistiria heteroclita (Roxb.) Hook.f.	Poaceae	UP	
92*	Pseudodichanthium serrafalcoides (T.Cooke & Stapf) Bor	Poaceae	UP	
93	Sehima nervosum (Rottl.) Stapf	Poaceae	UP	
94	Setaria pumila Roem. & Schult.	Poaceae	UP, MP	
95\$	Spodiopogon rhizophorus (Steud.) Pilger	Poaceae	MP, UP	
96	Sporobolus indicus (Buse) Baaijens	Poaceae	MP	
97	Themeda quadrivalvis (L.) O.Ktze.	Poaceae	MP, UP	
98\$	Triplopogon ramosissimus (Hack.) Bor	Poaceae	MP,UP	
99	Tripogon bromoides Roth	Poaceae	UP	
100	Tripogon capillatus Jaub. & Spach.	Poaceae	MP	
101\$	Tripogon jacquemontii Stapf	Poaceae	MP	
102\$	Tripogon lisboae Stapf	Poaceae	MP, UP	
103	Cocculus hirsutus (L.) W.Theob.	Menispermaceae	MP, UP	
104	Cyclea peltata (Lam.) Hook.f. & Thomson	Menispermaceae	UP	
105	Clematis gouriana Roxb. ex DC.	Ranunculaceae	UP	
106\$	Clematis hedysarifolia DC.	Ranunculaceae	UP	
107	Acacia auriculiformis Benth.	Leguminosae	MP	
108	Acacia pennata (L.) Willd.	Leguminosae	MP	
109	Acacia nilotica ssp. indica (Benth.) Brenan	Leguminosae	MP	
110	Aeschynomene indica L.	Leguminosae	UP	
111	Albizia lebbek (L.) Benth.	Leguminosae	BP	
112	Albizia odoratissima (L.f.) Benth.	Leguminosae	BP	
113	Alysicarpus bupleurifolius (L.) DC.	Leguminosae	Slope UP	
114	Alysicarpus vaginalis (L.) DC.	Leguminosae	Slope UP	
115	Bauhinia racemosa Lam.	Leguminosae	BP	
116	Butea monosperma (Lam.) Taub.	Leguminosae	BP	
117\$	Cajanus sericeus (Benth. ex Baker) Maesen	Leguminosae	Slope MP	
118	Canavalia gladiata (Jacq.) DC.	Leguminosae	Slope MP	
119	Cassia fistula L.	Leguminosae	Slope MP	
120	Chamaecrista mimosoides (L.) Greene	Leguminosae	MP	
121\$	Clitoria annua J.Graham	Leguminosae	MP	
122\$	Crotalaria filipes Benth.	Leguminosae	Slope UP, UP	
123	Crotalaria hebecarpa (DC.) Rudd	Leguminosae	Slope UP	
124	Crotalaria medicangea Lam.	Leguminosae	Slope UP	
125	Crotalaria mysorensis Roth	Leguminosae	Slope UP	
126	Crotalaria nana Burm.f.	Leguminosae	Slope UP	
127	Crotalaria pallida Aiton	Leguminosae Slope UP		
128	Crotalaria retuse L. Leguminosae Slope UP		Slope UP	
129	Crotalaria triquetra Dalzell	Leguminosae	Slope UP	
130	Crotalaria vestita Baker	Leguminosae	Slope UP	
131\$	Desmodiastrum belgaumense (Wight) A.Pramanik & Thoth.	Leguminosae	Slope UP	
132\$	Desmodiastrum racemosum var. rotundifolium (Baker) A.Pramanik & Thoth.	Leguminosae	Slope MP	
133	Desmodium laxiflorum DC.	Leguminosae	Slope UP	
134	Dolichos robustus Bolus	Leguminosae	MP	



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	Plant species	Family	Location
135	Dolichos trilobus L.	Leguminosae	Slope UP
136	Erythrina stricta Roxb.	Leguminosae	MP
137	Flemingia strobilifera (L.) W.T.Aiton	Leguminosae	MP
138	Geisaspis cristata Wight & Arn.	Leguminosae	Slope UP
139*	Geissaspis tenella Benth.	Leguminosae	Slope UP
140	Indigofera cordifolia B.Heyne ex Roth	Leguminosae	Slope MP
141	Indigofera linifolia L.f. Retz.	Leguminosae	Slope MP
142*	Indigofera santapaui Sanjappa	Leguminosae	MP
143	Indigofera trifoliata L.	Leguminosae	Slope MP
144	Mucuna pruriens (L.) DC.	Leguminosae	Slope MP
145	Paracalyx scariosus (Roxb.) Ali (as 'scariosa')	Leguminosae	Slope MP
146	Smithia bigemina Dalzell	Leguminosae	MP, UP
147\$	Smithia hirsuta Dalzell	Leguminosae	MP, UP
148\$	Smithia purpurea Hook.	Leguminosae	UP
149	Smithia sensitiva Aiton	Leguminosae	MP, UP
150*	Smithia setulosa Dalzell	Leguminosae	MP, UP
151	Teramnus labialis (L.f.) Spreng.	Leguminosae	Slope UP
152	Vigna dalzelliana (Kuntze) Verdc.	Leguminosae	Slope UP
153\$	Vigna khandalensis (Santapau) Sundararagh. & Wadhwa	Leguminosae	Slope UP
154*	Vigna sahyadriana Aitwade, K.V. Bhat & S.R.Yadav	Leguminosae	Slopes MP
155	Polygala arvensis Willd.	Polygalaceae	Slopes
156	Polygala persicariifolia DC.	Polygalaceae	Slopes
157	Elaeagnus conferta Roxb.	Elaeagnaceae	MP
158	Ziziphus rugosa Lam.	Rhamnaceae	MP
159	Ziziphus mauritiana Lam.	Rhamnaceae	MP
160	Trema orientalis (L.) Blume	Ulmaceae	MP
161	Ficus arnottiana (Miq.) Miq.	Moraceae	MP
162	Ficus exasperata Vahl	Moraceae	MP
163	Ficus racemosa L.	Moraceae	MP
164	Ficus tinctoria ssp. gibbosa (Blume) Corner	Moraceae	MP
165	Boehmeria macrophylla Hornem.	Urticaceae	Slope MP
166	Girardinia diversifolia (Link) Friis	Urticaceae	Slope MP
167	Laportea interrupta (L.) Chew	Urticaceae	MP
168	Lecanthus peduncularis (Wall. ex Royle) Wedd.	Urticaceae	UP
169	Pouzolzia zeylanica (L.) Benn.	Urticaceae	MP
170\$	Cucumis setosus Cogn.	Cucurbitaceae	MP
171	Diplocyclos palmatus (L.) C.Jeffrey	Cucurbitaceae	Slope MP,UP
172	Momordica cymbalaria Fenzl ex Naudin	Cucurbitaceae	Slope UP
173	Momordica dioica Roxb. ex Willd.	Cucurbitaceae	Slope UP
174\$	Solena amplexicaulis (Lam.) Gandhi	Cucurbitaceae	Slope UP
175	Trichosanthes tricuspidata Lour.	Cucurbitaceae	MP
176	Zehneria perpusilla (Blume) Bole & M.R.Almeida	Cucurbitaceae	MP
177	Begonia crenata Dryand.	Begoniaceae	BP,MP
178	Celastrus paniculatus Willd.	Celastraceae	Slope MP
179	Maytenus rothiana LobrCallen	Celastraceae	MP, Slope UP

Auti et al.

	Plant species	Family	Location		
180	Oxalis corniculata L.	Oxalidaceae	MP		
181\$	Euphorbia khandallensis Blatt. & Hallb.	Euphorbiaceae	MP, UP		
182	Euphorbia ligularia Roxb.	Euphorbiaceae	UP		
183*	Euphorbia pycnostegia Boiss.	Euphorbiaceae	Slope UP		
184	Falconeria insignis Royle	Euphorbiaceae	Along slopes of BP		
185	Jatropha curcas L.	Euphorbiaceae	MP		
186	Mallotus philippensis (Lam.) Müll.Arg.	Euphorbiaceae	MP, Slope UP		
187	Securinega leucopyrus (Willd.) MuellArg.	Euphorbiaceae	MP		
188	Bridelia retusa (L.) A.Juss.	Phyllanthaceae	BP, MP		
189\$	Glochidion hohenackeri (Müll.Arg.) Bedd.	Phyllanthaceae	MP		
190	Phyllanthus urinaria L.	Phyllanthaceae	MP		
191	Linum mysorense B.Heyne ex Wall.	Linaceae	Slope MP		
192	Terminalia chebula Retz.	Combretaceae	BP , MP		
193	Terminalia tomentosa Wight & Arn.	Combretaceae	BP		
194	Ammannia baccifera L.	Lythraceae	UP		
195\$	Lagerstroemia microcarpa Wight	Lythraceae	Foothills		
196*	Rotala malampuzhensis R.V.Nair ex C.D.K.Cook	Lythraceae	UP,MP		
197	Rotala rosea (Poir.) C.D.K.Cook	Lythraceae	UP, MP		
198	Rotala serpyllifolia (Roth) Bremek.	Lythraceae	UP		
199	Woodfordia fruticosa (L.) Kurz	Lythraceae	BP		
200	Ludwigia octovalvis (Jacq.) P.H.Raven	Onagraceae	UP		
201	Syzygium cumini (L.) Skeels	Myrtaceae	BP		
202*	Sonerila scapigera Dalzell	Melastomataceae	UP		
203	Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	UP		
204	Mangifera indica L.	Anacardiaceae -	BP , MP		
205	Schleichera oleosa (Lour.) Oken	Sapindaceae	MP		
206	Abelmoschus manihot (L.) Medik.	Malvaceae	MP		
207	Abutilon persicum (Burm.f.) Merr.	Malvaceae	MP		
208\$	Eriolaena quinquelocularis (Wight & Arn.) Wight	Malvaceae	MP		
209	Helicteres isora L.	Malvaceae	BP		
210	Kydia calycina Roxb.	Malvaceae	MP		
211	Sida acuta Burm.f.	Malvaceae	BP		
212	Sida cordata (Burm.f.) Borss.Waalk.	Malvaceae	ВР		
213	Sida rhomboidea Roxb. ex Fleming	Malvaceae	BP		
214	Sterculia guttata Roxb. ex G.Don	Malvaceae	Slope MP		
215	Thespesia lampas (Cav.) Dalzell	Malvaceae	MP		
216	Thespesia populnea (L.) Sol. ex Correa	Malvaceae	Foothills		
217	Triumfetta annua L.	Malvaceae	MP		
218	Triumfetta rhomboidea Jacq.	Malvaceae	MP		
219\$	Cleome simplicifolia Hook.f. & Thomson	Cleomaceae	Slope UP		
220	Cardamine trichocarpa Hochst. ex A.Rich.	Brassicaceae	Slope MP		
221	Roripa indica (L.) Hiern	Brassicaceae	МР		
222	Dendrophthoe falcata (L.f.) Ettingsh.	Loranthaceae	МР		
223	Persicaria glabra (Willd.) M.Gomez	Polygonaceae	МР		
224	Polygonum plebeium R.Br.	Polygonaceae	МР		



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	Plant species	Family	Location
225	Drosera indica L.	Droserceae	UP
226	Achyranthes aspera L.	Amaranthaceae	MP
227	Alternanthera ficoidea (L.) Sm.	Amaranthaceae	BP
228	Alternanthera sessilis (L.) R.Br. ex DC.	Amaranthaceae	Вр
229	Celosia argentea L.	Amaranthaceae	BP
230	Gomphrena celosioides Mart.	Amaranthaceae	MP
231	Nothosaerva brachiata (L.) Wight	Amaranthaceae-	Slope between MP and UP
232	Glinus lotoides L.	Aizoaceae	MP
233	Impatiens balsamina L.	Balsaminaceae	Slopes
234*	Impatiens dalzellii Hook.f. & Thomson	Balsaminaceae	Slopes along UP
235	Impatiens minor (DC.) Bennet	Balsaminaceae	MP
236	Impatiens oppositifolia L.	Balsaminaceae	MP
237	Careya arborea Roxb.	Lecythidaceae	MP
238	Diospyros montana Roxb.	Ebenaceae	MP
239	Anagallis arvensis L.	Primulaceae	MP
240	Anagallis pumila Sw.	Primulaceae	MP
241	Embelia tsjeriam-cottam (Roem. & Schult.) A.DC.	Primulaceae	MP
242	Catunaregam spinosa (Thunb.) Tirveng.	Rubiaceae	MP
243	Meyna laxiflora Robyns	Rubiaceae	MP
244\$	Neanotis foetida (Dalzell) W.H.Lewis	Rubiaceae	Slope, UP, UP
245	Neanotis montholonii (Hook.f.) W.H.Lewis	Rubiaceae	MP
246	Oldenlandia corymbosa L.	Rubiaceae	UP
247	Pavetta indica L.	Rubiaceae	MP
248	Spermadictyon suaveolens Roxb.	Rubiaceae	MP
249	Canscora diffusa (Vahl) R.Br. ex Roem. & Schult.	Gentianaceae	Slopes MP
250	Canscora pauciflora Dalzell	Gentianaceae	Slope UP
251\$	Centaurium meyeri (Bunge) Druce	Gentianaceae	MP
252\$	Exacum lawii C.B.Clarke	Gentianaceae	Slope UP, UP
253	Exacum petiolare Griseb.	Gentianaceae	Slope UP, UP
254\$	Swertia minor T.Cooke	Gentianaceae	Slope UP, UP
255	Calotropis procera (Aiton) Dryand.	Apocynaceae	BP
256	Carissa congesta Wight	Apocynaceae	MP
257*	Ceropegia anjanerica Malpure, M.Y.Kamble & S.R.Yadav	Apocynaceae	UP
258	Ceropegia bulbosa var. bulbosa Roxb.	Apocynaceae	UP
259*	Ceropegia lawii Hook.f.	Apocynaceae	MP, UP
260*	Ceropegia media (Huber) Ansari	Apocynaceae	Slopes
261	Cryptolepis buchananii Roem. & Schult.	Apocynaceae	UP
262	Cynanchum callialatum BuchHam. ex Wight	Apocynaceae	Slope between MP and UP
263\$	Frerea indica Dalzell	Apocynaceae	Along steep boulders
264	Hemidesmus indicus (L.) R. Br. ex Schult.	Apocynaceae	BP
265\$	Heterostemma alatum Wight & Arn.	Apocynaceae	UP
266	Nerium oleander L.	Apocynaceae	MP
267	Rauvolfia serpentina (L.) Benth. ex Kurz	Apocynaceae	BP
268\$	Tylophora dalzellii Hook.f.	Apocynaceae	MP
269\$	Adelocaryum coelestinum (Lindl.) Brand	Boraginaceae	Slope of UP

Auti et al.

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	Plant species	Family	Location
270\$	Adelocaryum malabaricum (C.B.Clarke) Brand	Boraginaceae	Slope of UP
271	Cordia dichotoma G.Forst.	Boraginaceae	BP
272	Cynoglossum wallichii G.Don	Boraginaceae	UP
273	Heliotropium indicum L.	Boraginaceae	MP
274	Heliotropium supinum L.	Boraginaceae	Slope of MP
275	Trichodesma inaequale Edgew.	Boraginaceae	MP
276*	Argyreia involucrata C.B.Clarke	Convolvulaceae	BP
277	Dinetus racemosus (Roxb.) BuchHam. ex Sweet	Convolvulaceae	MP
278	Ipomoea hederifolia L.	Convolvulaceae	MP
279	Ipomoea illustris (C.B.Clarke) Prain	Convolvulaceae	MP
280	<i>Ipomoea nil</i> (L.) Roth	Convolvulaceae	BP
281	Ipomoea obscura (L.) Ker Gawl.	Convolvulaceae	MP
282	Ipomoea triloba L.	Convolvulaceae	BP
283	Rivea hypocrateriformis Choisy	Convolvulaceae	MP
284	<i>Rivea ornata</i> Choisy	Convolvulaceae	MP
285	Solanum anguivi Lam.	Solanaceae	MP
286	Jasminum arborescens Roxb.	Oleaceae	MP
287	Olea dioica Roxb.	Oleaceae	MP
288	Lindenbergia muraria (Roxburgh ex D. Don) Brühl	Plantaginaceae	MP, UP
289	Mecardonia procumbens (Mill.) Small	Plantaginaceae	MP
290	Lindernia ciliata (Colsm.) Pennell	Linderniaceae	UP
291	Lindernia nummulariifolia (D.Don) Wettst.	Linderniaceae	UP
292	Lindernia parviflora (Roxb.) Haines	Linderniaceae	UP
293	Torenia indica C.J.Saldanha Linderniaceae		UP
294\$	Nepeta hundostana var. woodrowii (T.Cooke) Santapau	Lamiaceae	Slope UP
295	Anisochilus carnosus (L.f.) Wall.	Lamiaceae	MP
296\$	Anisomeles heyneana Benth.	Lamiaceae	Slope UP
297	Colebrookea oppositifolia Sm.	Lamiaceae	BP
298	Lantana camara L.	Lamiaceae	BP
299\$	Lavandula bipinnata (Roth) Kuntze	Lamiaceae	Slope MP
300	Leucas lavandulaefolia Rees	Lamiaceae	MP, UP
301	Leucas martinicensis (Jacq.) R.Br.	Lamiaceae	UP, MP Slope
302	Leucas stelligera Wall. ex Benth.	Lamiaceae	MP,UP
303	Plectranthus mollis (Aiton) Spreng.	Lamiaceae	MP
304	Pogostemon benghalensis (Burm.f.) Kuntze	Lamiaceae	BP
305\$	Pogostemon deccanensis (Panigrahi) Press	Lamiaceae	UP
306	Rotheca serrata (L.) Steane & Mabb.	Lamiaceae	Slope UP
307	Tectona grandis L.f.	Lamiaceae	BP
308	Vitex negundo L.	Lamiaceae	MP
309	Parasopubia delphiniifolia (L.) HP. Hofm. & Eb. Fisch.	Orobanchaceae	MP
310*	Rhamphicarpa longiflora Benth.	Orobanchaceae	MP
311	Striga gesnerioides (Willd.) Vatke	Orobanchaceae	UP
312\$	Utricularia janarthanamii S.R.Yadav, Sardesai & S.P.Gaikwad	Lentibulariaceae	UP
313 \$	Utricularia praeterita P.Taylor	Lentibulariaceae	UP
314	Utricularia striatula Sm.	Lentibulariaceae	MP and UP

Auti et al.

	Plant species	Family	Location	
315	Asystasia dalzeliana Santapau	Acanthaceae	MP	
316\$	Barleria lawii T.Anderson	Acanthaceae	Slope between BP and MP	
317*	Cynarospermum asperrimum (Nees) Vollesen	Acanthaceae	Slope between UP and MP	
318	Dicliptera leonotis Dalzell ex C.B.Clarke	Acanthaceae	MP	
319\$	Eranthemum roseum (Vahl.) R.Br.	Acanthaceae	Slopes	
320\$	Haplanthodes verticellata (Roxb.) R.B.Majumdar	Acanthaceae	UP	
321\$	Hemigraphis crenata (Benth.) Bremek.	Acanthaceae	Slope between MP and UP	
322\$	Hemigraphis latebrosa (Roth) Nees	Acanthaceae	Slope between MP and UP	
323	Hygrophila auriculata (Schumach.) Heine	Acanthaceae	MP	
324\$	Hygrophila serpyllum (Nees) T.Anderson	Acanthaceae	MP	
325	Justicia betonica L.	Acanthaceae	Slope between MP and UP	
326	Justicia japonica Thunb.	Acanthaceae	Slope between MP and UP	
327	Justicia procumbens L.	Acanthaceae	Slope between MP and UP	
328\$	Lepidagathis cuspidata Nees	Acanthaceae	MP and Slope between MP and UP	
329\$	Lepidagathis trinervis Nees	Acanthaceae	UP	
330\$	Neuracanthus sphaerostachys Dalzell	Acanthaceae	MP	
331	Peristrophe bicalyculata (Retz.) Nees	Acanthaceae	Slope between MP and UP	
332\$	Rungia elegans Dalzell & A.Gibson	Acanthaceae	Slope between MP and UP	
333	Rungia pectinata (L.) Nees	Acanthaceae	Slope between MP and UP	
334\$	Strobilanthes callosa Nees Acanthaceae		Slope between MP and UP , UP	
335\$	Strobilanthes reticulata Stapf	Acanthaceae	UP	
336\$	Heterophragma quadriloculare (Roxb.) K.Schum.	Bignoniaceae	BP	
337	Lantana camara L.	Verbenaceae	BP	
338	Martynia annua L.	Martyniaceae	MP	
339	Lobelia heyneana Schult.	Campanulaceae	Slope UP, UP	
340	Lobelia nicotianifolia Roth ex Schult.	Campanulaceae	Slope UP,UP	
341	Acmella paniculata (Wall. ex DC.) R.K.Jansen	Asteraceae	MP	
342	Ageratum conyzoides L.	Asteraceae	MP	
343	Bidens biternata (Lour.) Merr. & Sherff	Asteraceae	MP, BP	
344\$	Blumea eriantha DC.	Asteraceae	Slope between BP & UP	
345\$	Blumea malcolmii Hook.f.	Asteraceae	Slope between BP & UP	
346	Blumea mollis (D.Don) Merr.	Asteraceae	MP	
347\$	Caesulia axillaris Roxb.	Asteraceae	Slope between BP & UP	
348	Chromolaena odorata (L.) R.M.King & H.Rob.	Asteraceae	Slope between MP & UP	
349	Cosmos caudatus Kunth	Asteraceae	Slope between BP & UP	
350	Cyanthillium cinereum (L.) H.Rob.	Asteraceae	BP	
351\$	Cyathocline lutea Law ex Wight	Asteraceae	UP	
352	Cyathocline purpurea (BuchHam. ex D.Don) Kuntze	Asteraceae	MP	
353	Eclipta prostrata (L.) L.	Asteraceae	ВР	
354	Elephantopus scaber L.	Asteraceae	MP, UP	
355	Emilia sonchifolia (L.) DC. ex DC.	Asteraceae	Slope between MP & UP	
356	Erigeron trilobus (Decne.) Boiss.	Asteraceae	Slope between BP & UP	
357	Galinsoga parviflora Cav.	Asteraceae	Slope between MP & UP	
358	Gnaphalium pulvinatum Delile	Asteraceae	Slope between MP & UP	



	Plant species	Family	Location
359	Grangea maderaspatana (L.) Poir.	Asteraceae	Slope between MP & UP
360	Gynura bicolor (Roxb. Ex Willd.) DC.	Asteraceae	Slope between MP & UP
361	Kleinia grandiflora (Wallich ex DC.) N.Rani	Asteraceae	Slope between MP & UP
362	Lagascea mollis Cav.	Asteraceae	BP
363	Laphangium luteoalbum (L.) Tzvelev	Asteraceae	Slope between MP & UP
364	Launaea procumbens (Roxb.) Ramayya & Rajagopal	Asteraceae	BP
365*	Nanothamnus sericeus Thomson	Asteraceae	Slope between MP & UP
366	Pentanema cernuum (Dalzell) Ling	Asteraceae	MP, UP
367	Pentanema indicum (L.) Ling	Asteraceae	MP,UP
368\$	Phyllocephalum scabridum (DC.) K.Kirkman	Asteraceae	Slope between MP & UP
369	Pluchea senecioides (DC.) W.Theob.	Asteraceae	UP
370\$	Senecio bombayensis N.P.Balakr.	Asteraceae	MP, UP
371*	Senecio dalzellii C.B.Clarke	Asteraceae	MP,UP
372	Sigesbeckia orientalis L.	Asteraceae	UP
373	Sonchus oleraceus (L.) L.	Asteraceae	UP
374	Sphaeranthus indicus L.	Asteraceae	BP
375	Synedrella nodiflora (L.) Gaertn.	Asteraceae	MP
376\$	Tricholepis amplexicaulis C.B.Clarke	Asteraceae	MP
377	Tridax procumbens L.	Asteraceae	BP
378	Vernonia anthelmintica (L.) Willd.	Asteraceae	BP
379	Vernonia divergens (DC.) Edgew.	Asteraceae	BP
380	Xanthium strumarium L.	Asteraceae	BP
381*	Heracleum grande (Dalzell & A. Gibson) Mukhop.	Apiaceae	UP
382\$	Pimpinella adscendens Dalzell	Apiaceae	UP
383\$	Pimpinella wallichiana (Miq.) Gandhi	Apiaceae	Slopes
384*	Pinda concanensis (Dalzell) P.K. Mukh. & Constance	Apiaceae	UP and Slopes
385	Trachyspermum roxburghianum (DC.) H.Wolff	Apiaceae	UP

\$-Endemic to India | *-Endemic to Western Ghats | MP-Middle plateau | BP-Basal plateau | UP-Upper plateau.

the peak flowering period on the plateau; 3. In the post monsoon phase (October–December) *Arundinella ciliata, Indopoa paupercula, Dimeria* spp., and *Striga gesnerioides* come in flowering; 4. The fourth phase (January–May) is the dry period during which only a few species such as *Blumea eriantha, Blumea malcolmii, Lepidgathis cuspidata* flower in January–February. *Drimia polyantha, Euphorbia khandallensis,* and *Pancratium nairii* flowers in March. Observations on the phenology of the plants revealed that maximum number of species complete their reproductive cycle between July and December.

Middle slopes of Anjaneri Hill exhibit small patch of evergreen trees, shrubs, and herbaceous flora due to retention of some amount of soil. Surrounding plants also affected the climatic condition of the plateaux, which favors the herbaceous flora, e.g., the forest undergrowth.

Threats

Anjaneri Hill is utilized for grazing, resource extraction, and tourism. Relatively easy road access, trampling, trails, and tourist services, could have direct or indirect impacts on floristic diversity. We have reported the shifting of few plant species and decrease in population from middle level e.g., *Pinda concanensis*, *Pancratium nairii*, *Drimia polyantha*, *Polygala arvensis*, and few species of *Smithia* to upper plateaux due to drastic seasonal changes in moisture content, amount and time of rainfall. Heavy rainfall for longer duration causes vegetative growth and delay in initiation of flowering in *Pogostemon deccanensis*.

Adaptive traits

Plants on this plateau experience harsh environmental conditions, e.g., drought, high temperature and

light intensities and nutrient deficiency, which cause development of certain traits in plants of plateaux, which allow them to overcome environmental adversities. A detailed account on the adaptation/eco-physiology of vascular plants of rock outcrops is provided by Kluge & Brulfert (2000). Some well-known adaptive traits that have been observed in the vascular plants on the plateaux are mentioned below (modified after Biedinger et al. 2000).

1. Carnivory: It is a means to overcome the scarcity of Nitrogen, Phosphorous and Sulphur in the soil. Carnivorous plants are extremely calcifuge and need acidic and wet soils (Kluge & Brulfert 2000). *Drosera indica*, *Utricularia prateirata* are the common carnivores on the plateaux. These species comprise ephemeral vegetation where soil deposition is negligible.

2. Succulence: Succulence is a 'desiccation avoidance strategy' in xeric habitats. Typical leaf succulents of the plateau are *Cyanotis concanensis* Hassk. and *Euphorbia khandallensis*.

3. Poikilohydry: These are plants in which water content varies with the varying humidity in the environment. Desiccation tolerance is mainly a protoplasmic property, e.g., *Tripogon lisboae*.

4. Subterranean perennating organs: This is yet another adaptive strategy of the plants of the

plateau in the form of underground perennation organs like corms, rhizomes, bulbs, and tubers, e.g., geophytes like *Ceropegia anjanerica*, *C. lawii*, *Curcuma neilgherrensis*, *Cyanotis fasciculata*, *C. concanensis*, *Eriocaulon tuberiferum*, *Euphorbia khandallensis*, *Habenaria* spp., and *Hypoxis aurea*.

5. Vegetative propagation: Vegetative propagules such as bulbs and bulbils formed at the leaf tips are an adaptation of some plants of the plateaux, e.g., *Curculigo orchioides*

CONCLUSIONS

Anjaneri a basaltic outcrop is unique due to great diversity (385 species), high endemism (114 taxa) and as type locality of *Ceropegia anjanerica*. Outcrop exhibited different habitats due to its distinct geographical location, climatic condition and edaphic nature. Due to adverse climatic conditions and extreme micro-environments, plants have developed unique morphological, physiological and life cycle adaptations.

The environmental uniqueness, high diversity, IUCN assessment studies, high anthropogenic activities and rapid destruction of these ecosystems make Anjaneri

outcrop a "hotspeck". Systematic approaches are required to conserve various unique habitats, which supported great diversity of existing plant species and for the conservation of *Ceropegia anjanerica*.

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Author contribution: SAG done the preliminary survey of the area, planned the field tours and documented the Plants through Video Camera, wrote the first raw draft of the MS. SSK analyzed the data, identified the dicotyledonous plants and confirmed their identity. KVCG worked on the monocotyledonous plants especially on the grasses and photographed the plants. ANC documented and confirmed the identities of the monocotyledonous plants especially Cyperaceae.







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Short Communications

A threat assessment of Three-striped Palm Squirrel *Funambulus palmarum* (Mammalia: Rodentia: Sciuridae) from roadkills in Sigur Plateau, Mudumalai Tiger Reserve, Tamil Nadu, India

 Arockianathan Samson, Balasundaram Ramakrishnan & Jabamalainathan Leonaprincy, Pp. 16347–16351

Impact of vehicular traffic on birds in Tiruchirappalli District, Tamil Nadu, India – T. Siva & P. Neelanarayanan, Pp. 16352–16356

Ichthyofaunal diversity of Manjeera Reservoir, Manjeera Wildlife Sanctuary, Telangana, India

- Kante Krishna Prasad, Mohammad Younus & Chelmala Srinivasulu, Pp. 16357-16367

New distribution record of the endemic and critically endangered Giant Staghorn Fern *Platycerium grande* (Fee) Kunze (Polypodiaceae) in central Mindanao – Cherie Cano-Mangaoang & Charissa Joy Arroyo Gumban, Pp. 16368–16372

Notes

First photographic record of the Dhole *Cuon alpinus* (Mammalia: Carnivora: Canidae) from the Sirumalai Hills in Tamil Nadu, India

- B.M. Krishnakumar & M. Eric Ramanujam, Pp. 16373-16376

Tracing heavy metals in urban ecosystems through the study of bat guano

- a preliminary study from Kerala, India

- Jithin Johnson & Moncey Vincent, Pp. 16377-16379

Population dynamics and management strategies for the invasive African Catfish Clarias gariepinus (Burchell, 1822) in the Western Ghats hotspot – Kuttanelloor Roshni, Chelapurath Radhakrishnan Renjithkumar, Rajeev Raghavan, Neelesh Dahanukar & Kutty Ranjeet, Pp. 16380–16384

First records of the black widow spider *Latrodectus elegans* Thorell, 1898 (Araneae: Theridiidae) from Nepal

- Binu Shrestha & Tobias Dörr, Pp. 16385-16388

First report of the assassin bug *Epidaus wangi* (Heteroptera: Reduviidae: Harpactorinae) from India

- Swapnil S. Boyane & Hemant V. Ghate, Pp. 16389-16391

Observations of the damselfly *Platylestes* cf. *platystylus* Rambur, 1842 (Insecta: Odonata: Zygoptera: Lestidae) from peninsular India – K.J. Rison & A. Vivek Chandran, Pp. 16392–16395

Herminium longilobatum (Orchidaceae), a new record for Bhutan – Ugyen Dechen, Tandin Wangchuk & Lam Norbu, Pp. 16396–16398

Recent record of a threatened holoparasitic plant Sapria himalayana Griff. in

Mehao Wildlife Sanctuary, Arunachal Pradesh, India – Arif Ahmad, Amit Kumar, Gopal Singh Rawat & G.V. Gopi , Pp. 16399–16401

Eleven new records of lichens to the state of Kerala, India

 Sonia Anna Zachariah, Sanjeeva Nayaka, Siljo Joseph, Pooja Gupta & Scaria Kadookunnel Varghese, Pp. 16402–16406

www.threatenedtaxa.org

Editorial

Pakshirajan Lakshminarasimhan: a plant taxonomist who loved plants and people alike – Mandar N. Datar, Pp. 16195–16203

Communications

The worrisome conservation status of ecosystems within the distribution range of the Spectacled Bear Tremarctos ornatus (Mammalia: Carnivora: Ursidae) in Ecuador – José Guerrero-Casado & Ramón H. Zambrano, Pp. 16204–16209

Living with Leopard *Panthera pardus fusca* (Mammalia: Carnivora: Felidae): livestock depredation and community perception in Kalakkad-Mundanthurai Tiger Reserve, southern Western Ghats

– Bawa Mothilal Krishnakumar, Rajarathinavelu Nagarajan & Kanagaraj Muthamizh Selvan, Pp. 16210–16218

An updated checklist of mammals of Odisha, India

- Subrat Debata & Himanshu Shekhar Palei, Pp. 16219-16229

Negative human-wildlife interactions in traditional agroforestry systems in Assam, India – Yashmita-Ulman, Manoj Singh, Awadhesh Kumar & Madhubala Sharma, Pp. 16230–16238

Prevalence and morphotype diversity of *Trichuris* species and other soil-transmitted helminths in captive non-human primates in northern Nigeria – Joshua Kamani, James P. Yidawi, Aliyu Sada, Emmanuel G. Msheliza & Usman A. Turaki,

Pp. 16239–16244

Detection of hemoparasites in bats, Bangladesh

Shariful Islam, Rakib Uddin Ahmed, Md. Kaisar Rahman, Jinnat Ferdous, Md. Helal Uddin,
 Sazeda Akter, Abdullah Al Faruq, Mohammad Mahmudul Hassan, Ausraful Islam & Ariful
 Islam, Pp. 16245–16250

Ecology of the Critically Endangered Singidia Tilapia (Teleostei: Cichlidae: Oreochromis esculentus) of lake Kayanja, Uganda and its conservation implications

- Richard Olwa, Herbert Nakiyende, Elias Muhumuza, Samuel Bassa, Anthony Taabu-Munyaho & Winnie Nkalubo, Pp. 16251–16256

Length-weight relationships of two conservation-concern mahseers (Teleostei: Cyprinidae: Tor) of the river Cauvery, Karnataka, India

– Adrian C. Pinder, Rajeev Raghavan, Shannon D. Bower & J. Robert Britton, Pp. 16257– 16261

The identity and distribution of *Bhavania annandalei* Hora, 1920 (Cypriniformes: Balitoridae), a hillstream loach endemic to the Western Ghats of India

 Remya L. Sundar, V.K. Anoop, Arya Sidharthan, Neelesh Dahanukar & Rajeev Raghavan, Pp. 16262–16271

Records of two toads *Duttaphrynus scaber* and *D. stomaticus* (Amphibia: Anura: Bufonidae) from southeastern India

– S.R. Ganesh, M. Rameshwaran, Naveen A. Joseph, Ahamed M. Jerith & Sushil K. Dutta, Pp. 16272–16278

Some rare damselflies and dragonflies (Odonata: Zygoptera and Anisoptera) in Ukraine: new records, notes on distribution, and habitat preferences

- Alexander V. Martynov, Pp. 16279-16294

Floristic diversity of Anjaneri Hills, Maharashtra, India

– Sanjay Gajanan Auti, Sharad Suresh Kambale, Kumar Vinod Chhotupuri Gosavi & Arun Nivrutti Chandore, Pp. 16295–16313

A checklist of macrofungi (mushroom) diversity and distribution in the forests of Tripura, India

— Sanjit Debnath, Ramesh Chandra Upadhyay, Rahul Saha, Koushik Majumdar, Panna Das & Ajay Krishna Saha, Pp. 16314–16346



Member





Karyomorphology of *Senecio hewrensis* (Asteraceae): An Endemic Species from India

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Summary Senecio hewrensis Hook.f. (Asteraceae) is one of endemic species to the India. Chromosome number and karyomorphology of the species were unknown. Thus, in present communication the somatic chromosome number and karyomorphology were described of *S. hewrensis*. Somatic chromosome number was observed 2n=20. Karyotype formula is 2n=20=20m. The karyotype is 1A of Stebbins category.

Keywords Endemic, India, Karyotype, Mitosis, Senecio hewrensis.

Senecio L. is one of the largest, polymorphic, and considered as a primitive genus of the family Asteraceae (Hajra *et al.* 1995) and distributed cosmopolitan with about 1000 species (Mabberley 2017). In India, the genus is represented by 43 species, and among them, 20 species and one variety are endemic to India (Singh *et al.* 2015). Although the genus represented wealth in terms of species in India, there is very few attempts has carried out to cytological work. *S. hewrensis* Hook.f. is less known species and grows on the dry hilly region of Maharashtra and Rajasthan states. *S. hewrensis* is a very unique species as it shows constant three ray floret in each capitulum (Fig. 1b).

Endemic nature, unknown cytological information and unique floral characters attracted for the karyotypic study of the species. Thus, in present communication somatic chromosome counts and basic karyomorphology have been investigated in *S. hewrensis*.

Materials and methods

Cypsela of *S. hewrensis* was collected from the Chambar leni, Nashik city, Maharashtra state. The voucher specimen is deposited in the Herbarium, Department of Botany, Shivaji University, Kolhapur (SUK). Root tips were obtained from cypsela germinated in between two moist blotting papers in glass Petri dishes. Root tips of 4–6mm length were pretreated with a saturated solution of *p*-dichlorobenzene at 6 to 11°C for 6 to 7h (9:30–10:30 am to 3:30–4:30 pm). The root tips were squashed in 2% propionic orcein. Ten well-spread somatic chromosomes plates were analyzed for karyo-

type analysis following Levan *et al.* (1964) formulae. The well-spread somatic plates were photographed with an Olympus digital camera under an Olympus 20*i* microscope. The degree of karyotype asymmetry has been determined using A1 and A2 indices (Romero 1986) and the categories of Stebbins (1971).

Results and discussion

Somatic chromosome number in *S. hewrensis* was observed as 2n=20 (Fig. 1e, f). Chromosomes ranged from 2.15 to $1.52\,\mu$ m in length and centromeric position was observed median (m) only (Table 1). The total chromosome length of the haploid complement (TCLH) was 18.64 μ m. The total form percentage (TF%) was 41.96. Symmetric Index (SI) was 72.44 and Gradient Index (GI) was 70.47. The coefficient of variation of chromosome lengths (CVcl) and Coefficient of variation of the centromeric index (CVci) were observed 11.36 and 4.07 respectively. Intrachromosomal asymmetry index (A1) and Interchromosomal asymmetry index (A2) were observed 0.67 and 0.11 respectively. The karyotype formula was observed as 2n=20=20m and 1A asymmetric category (Stebbins 1971).

The genus *Senecio* is represented a wealth number of species and high diversification in India. However, very less cytological investigations work has been done especially on endemic species and all those species (*S. candicans* Wall ex DC., *S. lavendulaefolius* DC. and *S. neelgherryanus* DC.) were showed same chromosome number, 2n=20 (Shetty 1967, Mathew and Mathew 1978, 1988). Species of the *Senecio* which are showing basic chromosome number (x=10) considered as more primitive in the family Asteraceae because of highly symmetrical nature with median centro-

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Fig. 1. S. hewrensis: a. Habit, b. Capitulum, c. Ray floret, d. Disc floret, e. Somatic chromosome plate, f. Karyotype.

Table	1.	Karyo	typic	analysis	of S.	hewrensis.
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Chromosome pair	Long arm (l) (µm)	Short arm (s) (µm)	Total length $c=1+s \ (\mu m)$	ʻd' value l–s (μm)	'r' value l/s	'I' value s/c ×100	Centromeric position
I	1.19 ± 0.32	0.96 ± 0.22	2.15±0.53	0.23	1.23	44.77	m
II	1.26 ± 0.37	0.84 ± 0.18	2.11±0.53	0.43	1.51	39.64	m
III	1.16 ± 0.20	0.87 ± 0.24	2.03 ± 0.40	0.29	1.33	42.84	m
IV	1.14 ± 0.26	0.83 ± 0.22	1.96±0.43	0.31	1.38	42.04	m
V	1.11 ± 0.28	0.84 ± 0.19	1.95 ± 0.42	0.28	1.33	42.95	m
VI	1.08 ± 0.30	0.77 ± 0.13	1.85 ± 0.41	0.31	1.41	41.35	m
VII	0.99 ± 0.21	0.75 ± 0.19	1.74 ± 0.37	0.24	1.32	43.10	m
VIII	0.98 ± 0.20	0.69 ± 0.15	1.68±0.33	0.29	1.42	41.34	m
IX	0.96 ± 0.18	0.69 ± 0.17	1.66±0.33	0.27	1.39	41.84	m
Х	0.93 ± 0.29	0.59 ± 0.19	1.52 ± 0.40	0.34	1.57	38.94	m

meres and comparatively large size of chromosomes (Mehra 1977). *S. hewrensis* shows advance morphological characters, only three ray florets and few disc florets (reduction of florets) and dwarf habit (reduction of size) (Fig. 1a–d), but present karyomorphological characters (x=10, median type of chromosomes, 1A asymmetric category of Stebbins classification) of *S. hewrensis* supports the view of Mehra (1977).

Chromosome number 2n=20 and karyomorphology of *S. hewrensis* is reported for the first time in the present paper. For understand the phylogenetic interrelationship of *S. hewrensis* karyomorphological study is needed in

other endemic species of the genus Senecio.

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List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/institution / industry/corporate house with whom the MOU/ collaboration/linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	Pune Vidyarthi Gruha,s S.S.D. College of Commerce Science & Arts, Mhasrul, Nashik-42004	2020-21	1.	2023	Seminar on Organic Chemistry



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5 Without Prejudice, Memorandum of Understanding (MOU) Between

Gokhale Education Society's

HPT Arts and RYK Science College, Nashik, Maharashtra- 422005

&

PUNE VIDHYARTHI GRIHA'S

Shriram Sadashiv Dhamankar College of Commerce, Science and Arts, Nashik-04.

This document constitutes as Memorandum of Understanding (MOU) between HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 and Shriram Sadashiv Dhamankar College of Commerce, Science and Arts, Nashik, Maharashtra- 422 004 on 1st June 2020

1. Aim of this MOU:

Enhancing educational opportunities, research capabilities, and industry collaboration.

2.Objective:

The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

- 2a) Collaborative Academic Programs
- 2b) Industry-Relevant Training
- 2c) Resources sharing
- 2d) Resource person for knowledge sharing.
- 2e) Training and Workshops
- 2f) Internships and Placements Assistance
- 2g) Access to Specialized Equipment

3) This MOU shall be effective only after HPT Arts and RYK Science College, Nashik and Shriram Sadashiv Dhamankar College of Commerce, Science and Arts, Nashik-04 mutually agreed the terms & conditions.

3a) In case of Students and faculty internship program, both have to follow all rules and regulation lead by the HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 & Shriram Sadashiv Dhamankar College of Commerce, Science and Arts, Nashik, Maharashtra- 422 004. Individual cannot claim for any stipend or financial support from both the parties.

3b) Any kind of Misbehave, theft, physical injury, etc. will lead in to legal action against the individual.

3c) Any breakage or damages to the resources of both the parties will result into penalty from the individual.

4. General Terms Of MOU:

4*a***)** *Duration of MOU:* This MOU shall be operational upon signing and will have duration of 1 (One) year i.e. on or before 31st May 2021. All Activities conducted before this date within the vision/objectives of this joint collaboration will be deemed to fall under this MOU.

4b) Co-ordination: In order to carry out and fulfil the aims of this MOU, each party to appoint an appropriate person(s) to represent its organization and to coordinate, implementation of activities. Full names, designations, Mobile numbers, Email IDs of such persons will be incorporated in this MOU.

4c) Financial Implementations: There is no financial cost, liability in any manner whatsoever is involved in this MOU from both the parties. No right/title/interest in any manner will be created in either of parties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's, teacher's and industries benefit at large.

4d) Confidentiality: Each party agrees that it shall not, at any time, after executing the activities of this MOU, will disclose any information without mutual consent.

4e) Termination of MOU: This MOU shall terminate any time with 1(One) month prior written notice to each other by both the parties without assigning any reason.

4f) Extension of MOU: This MOU will be further extendible by 3 (Three) years, at the mutual consent of both parties on further mutually agreed terms.

4g) Communications: All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email followed by Registered Post A/D to the other party.

4h) Addendum: Any addendum to this MOU shall be in writing & signed by both the parties.

Herewith both the parties confirm that provisions in this MOU does not go against the rules and regulations of the Government policies. Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU.

LEGE NAS

IN WITNESS WHEREOF, the parties here to have executed

HPT Arts and RYK Science College, Nashik, Maharashtra- 422005

Shriram Sadashiv Dhamankar College of Commerce, Science and Arts, Nashik, Maharashtra- 422 004

Doul

Prof. Dr. S. J. Kharat Head & Professor, Dept. of Chemistry, hodchemistry@hptrykcollege.com chemistry Head Of The Chemistry Department HPT /RYK College, Nashik-fi

Dr. S. G. Wakchaure (I/c-Principal, P.V.G.'s S. S. Dhamankar College, Nashik) pvgcollegenasik@rediffmail.com

PRINCIPAL P.V.G's Shriram Sadashiv Dhamankar Commerce, Science & Arts College Dindori Road, Mhasrul, Nashik - 422 004 **Coordinator** person on behalf of **Chemistry Dept, HPT Arts and RYK Science College, Nashik, Maharashtra- 422005** **Coordinator** person on behalf of Shriram Sadashiv Dhamankar College of Commerce, Science and Arts, Nashik, Maharashtra- 422 004

Montreltor

Dr. A. Ct. Oholi (coordinator) Dept chemisitiq 1) College, Nashin 2) Dr. A. A. Patil. Dipt. Chemising HPT Arts & Ryle Scince 3) College, Nashik

M. M. Jedhar. pro's 5.5. Dhamankar College of 2) <u>(ommerce, science & Arts, Nashik</u>

D. M. Deshmulch. P. V. G' 3. 3. Dhamankal. college 4) of commerce, science & Arts Nor 4)


Attiliated to Savitribal Phule Pune University, Pune, University ID No. PU/NS/CS/110/2008 Govt. Order No. (NGC-2007 (187/07) Mash/-3

Date - 25/04/2023

To, Mr.A.A.Patil Assistant Professor, Department of Chemistry HPT Arts & RYK Science College, Nashik.

Subject: - Invitation as a resource person for "Seminar on Organic Chemistry"

Respected Sir,

It gives us immense pleasure to inform you that our college is organizing a "Seminar on

Organic Chemistry (Mechanism of Organic Reactions) on" 02/05/2023.

We are glad to invite you to contribute as a resource person and guide our students.

Kindly accept our invitation.

Thanking You.

Dr. Sanjay Wakehaure

I/C Principal







Affiliated to Savitribal Phule Pune University, Pune, University ID No. PU/NS/CS/110/2008 Govt. Order No. (NGC-2007 (187/07) Mashi-3

Date:02/05/2023

To, Mr.A.A.Patil Assistant Professor, Department Of Chemsitry HPT Arts & RYK Science College, Nashik.



Sub: - Thanks for taking Seminar on "Organic Chemistry"

Respected Sir,

We wish to thank you for the valuable information and guidance on "Organic Chemistry(Mechanism of Organic Reactions)" arranged by the Department of Science

We appreciate the time you took out of your busy schedule to join us. Thank you for sharing your expertise with our students. Your willingness, time, energy and support on behalf of Pune Vidyarthi Griha's S.S.Dhamankar Arts, Commerce, and Science College is greatly appreciated.

Again many thanks for your time and efforts. I took forward with you in future

Thank You.

Dr. Sanjay Wakehaure

I/C Principal





Alterated to Savkribal Phase Public University, Public, University to No. PUV/S/CS/110/2008

Date- 22/11/2022

To, Dr.A.G.Dholi, Assistant Professor, Department of Chemistry, HPT_Aris, RYK Science College, Nashik-5.

Subject : - Thanks for sharing your expertise "Recent trends in Nanotechnology"

Respected Sir.

We wish to thank you for the valuable information and guidance on "Recent trends in Nanotechnology" in Chemistry, Expert guidance arranged by the Department of Chemistry(Science) at PVG's S. S. Dhamankar College of Commerce, Science & Arts Nashik scheduled on 21st November 2022.

We appreciate the time you took out of your busy schedule to join us. Thank you for sharing your expertise with our students. Your willingness, time, energy and support on behalf of Pune Vidyarthi Griha's S. S. Dhamankar College of Commerce, Science & Arts is greatly appreciated.

Again many thanks for your time and efforts. I look forward with you future.

Think You.



Dr. Sanjay Wakehaure

UC Principal



206. B/h Refunce Petrol Pump, Dindon Brad, MERI, Mhaszul, Nashik - 422 004.
 0253 6480120 | 6480044 | 6480003 000 pvgcollegenasik.cirediffmail.com 000 www.pvgssdcollege.org



Attiliated to Savitribal Phule Pune University, Pune, University ID No. PU/NS/CS/110/2006 Govt. Order No. (NGC-2007 (187/07) Mashi-3

Date- 19/11/2022

To. Dr.A.G.Dholi. Assistant Professor. Department of Chemistry, HPT.Arts, RYK Science College, Nashik-5.

Subject: - Invitation as a resource person for one day seminar on "Recent trends in Nanotechnology"

Respected Sir.

It gives us immense pleasure to inform you that our college is organizing a " Short term course on "Recent trends in Nanotechnology" .We are glad to invite you to contribute as a resource person and guide our students On 21¹⁰ November 2022.

Kindly accept our invitation

Thanking You.



Dr. Shnjay Wakehaure

1 C Principal



9 206, B/h Reliance Petrol Pump, Dindon Road, MERI, Mhasrul, Nashik - 422 004 🕐 0253 - 6480020 | 6480044 | 6480003 🗱 pvgcollegenasiki@rediffmail.com 🌐 www.pvgssdcollege.org



Permanently Affiliated to Savitribai Phule Pune University (ID No.: PU/NS/AS/001(1924) NAAC Re-Accredited: 'A' Grade | ISO 9001:2015 Certified | Best College award by SPPU 2019-20

List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/ institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	A-Cube Holidays Nashik- 422011	2021-22	1.	2022	Campus Interview for Post of Tour Consultant, Holidays Sales Executive & Franchise Sales Executive



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

HPT Arts & RYK Science College Nashik - 422005

&

A-Cube Holidays Nashik -422011

FOR

SKILL DEVELOPMENT, OUTCOME BASED TRAININGS, PLACEMENT, R&D SERVICES AND RELATED SERVICES





MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter called as the 'MOU') is entered into on this the Tuesday 15th June 2021 upto 14 June 2022 by and between

HPT Arts & RYK Science College Nashik - 422005 represented herein by its Name of Competent Authority / Representative (hereinafter referred as 'First Party', the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

AND

A-Cube Holidays Nashik and represented herein by its Mr. Abhijeet Dharankar Manager, of A-Cube Holidays Nashik (hereinafter referred to as "Second Party", company which expression, unless excluded by or repugnant to the subject or context shall include its successors – in-office, administrators and assigns).

(First Party and Second Party are hereinafter jointly referred to as 'Parties' and individually as 'Party') as

WHEREAS:

A) First Party is a Higher Educational Institution named:

HPT Arts & RYK Science College, Department of Travel & Tourism Management, Nashik - 422005

- B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.
- C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education and Research.
- D) Both Parties, being legal entities in themselves desire to sign this MOU for advancing their mutual interests.
 A-Cube Holidays Nashik-, the Second Party is engaged in R & D Services in the fields of World Tourism Day, Study Tour, Hands-on- Training, Skill development, Information Technology, Vocational Education, the Second Party is promoted by, Principal, HPT Arts & RYK Science College Nashik 422005 an affiliated college of S.P. Pune University, Pune.
- E) Give related information, its branches, and dimensional information about the industry concerned with whom the MoU is sworn.



NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERE TO AGREE AS FOLLOWS: CLAUSE 1

CO-OPERATION

- 1.1 Both Parties are united by common interests and objectives, and they shall establish channels of communication and co-operation that will promote and advance their respective operations within the Institution and its related wings. The Parties shall keep each other informed of potential opportunities and shall share all information that may be relevant to secure additional opportunities for one another.
- 1.2 First Party and Second Party co-operation will facilitate effective utilization of the intellectual capabilities of the faculty of First Party providing significant inputs to them in developing suitable teaching / training systems, keeping in mind the needs of the industry, the Second Party.
- 1.3 The general terms of co-operation shall be governed by this MOU. The Parties shall cooperate with each other and shall, as promptly as is reasonably practical, enter into all relevant agreements, deeds and documents (the 'Definitive Documents') as may be required to give effect to the actions contemplated in terms of this MOU. The term of Definitive Documents shall be mutually decided between the Parties. Along with the Definitive Documents, this MOU shall represent the entire understanding as to the subject matter hereof and shall supersede any prior understanding between the Parties on the subject matter hereof.

CLAUSE 2 SCOPE OF THE MoU

- 2.1 The budding graduates from the institutions could play a key role in technological up-gradation, innovation and competitiveness of an industry. Both parties believe that close co-operation between the two would be of major benefit to the student community to enhance their skills and knowledge.
- 2.2 Curriculum Design: Second Party will give valuable inputs to the First Party in teaching / training methodology and suitably customize the curriculum so that the students fit into the industrial scenario meaningfully.
- 2.3 Industrial Training & Visits: Industry and Institution interaction will give an insight in to the latest developments / requirements of the industries; the Second Party to permit the Faculty and Students of the First Party to visit its group companies and also involve in Industrial Training Programs for the First Party. The industrial training and exposure provided to students and faculty through this association will build confidence and prepare the students to have a smooth transition from academic to working career. The Second Party will provide its Labs / Workshops / Industrial Sites for the hands-on training of the learners enrolled with the First Party.

- 2.4 Research and Development: Both Parties have agreed to carry out the joint research activities in the fields of A-Cube Holidays Nashik.
- 2.5 Skill Development Programs: Second Party to train the students of First Party on the emerging technologies in order to bridge the skill gap and make them industry ready.
- **2.6 Guest Lectures:** Second Party to extend the necessary support to deliver guest lectures to the students of the First Party on the technology trends and in house requirements.
- 2.7 Faculty Development Programs: Second Party to train the Faculties of First Party for imparting training as per the industrial requirement considering the National Occupational Standards in concerned sector, if available.
- 2.8 Placement of Trained Students: Second Party will actively engage to help the delivery of the training and placement of students of the First Party into internships/jobs; and will facilitate placements for at least 10% of the students. The Second Party will itself absorb at least 10% percentage of the trained students.
- 2.9 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required for offering the Programmes on the terms specified herein
- 2.10 There is no financial commitment on the part of the HPT Arts & RYK Science College Nashik 422005, the First Party to take up any programme mentioned in the MoU. If there is any financial consideration, it will be dealt separately.

CLAUSE 3 INTELLECTUA PROPERTY

3.1 Nothing contained in this MOU shall, by express grant, implication, Estoppel or otherwise, create in either Party any right, title, interest, or license in or to the intellectual property (including but not limited to know-how, inventions, patents, copy rights and designs) of the other Party.

CLAUSE 4 VALIDITY

- 4.1 This Agreement will be valid until it is expressly terminated by either Party on mutually agreed terms, during which period A-Cube Holidays Nashik, the Second Party, as the case may be, will take effective steps for implementation of this MOU. Any act on the part of A-Cube Holidays Nashik, the Second Party after termination of this Agreement by way of communication, correspondence etc., shall not be construed as an extension of this MOU
- 4.2 Both Parties may terminate this MOU upon 30 calendar days' notice in writing. In the event of Termination, both parties have to discharge their obligations.

CLAUSE 5 RELATIONSHIP BETWEEN THE PARTIES

It is expressly agreed that First Party and Second Party are acting under this MOU as independent contractors, and the relationship established under this MOU shall not be construed as a partnership. Neither Party is authorized to use the other Party's name in any way, to make any representations or create any obligation or liability, expressed or implied, on behalf of the other Party, without the prior written consent of the other Party. Neither Party shall have, nor represent itself as having, any authority under the terms of this MOU to make agreements of any kind in the name of or binding upon the other Party, to pledge the other Party's credit, or to extend credit on behalf of the other Party.

Any divergence or difference derived from the interpretation or application of the MoU shall be resolved by arbitration between the parties as per the Arbitration Act, 1996. The place of the arbitration shall be at District Head Quarters of the First Party. This undertaking is to be construed in accordance with Indian Law with exclusive jurisdiction in the Courts of Nashik District.

AGREED:

moreshpanz

5.1

Name of the Institution HPT Arts & RYK Science College Nashik

Authorized Signatory

Name of Company A-Cube Holidays Nashik For A-Cube Holidays

en Proprietor Authorized Signatory



Nome	- 6	41			
rvame	01	the	Instit	ution:	Name of Industry: A-Cube Holidays
HPT Arts	& RYK	Science (College Na	shik –	Office: 217 and Flags Section 21
422005					Office. 317, 310 Floor, Samraat Nucleus,
F 1 1					Bhagwant Nagar, Bhabha Nagar Nashik
Email:prinh	iptryknsk	@rediffma	ail.com		India Malana I.
Phone No '	$(0) \cdot 0253$	3-2572153			India, Manarashtra
	(0).0255	2372133			MOB: 9325215151
					Email: info@acubeholidays.com

Witness 1: Whank

Witness 3:

Witness 2:

Mfride Witness 4:

5



Date: 07/03/2022

Campus Interview Notice

Name of Company	: A - Cube Holidays & Purva Paryatan Nasily
Day and Date Time Venue	 Saturday, 12th March 2022 11.30 a.m. Seminar Hall, H.P.T. Arts and R.Y.K. Science
Qualification	: B.A. Travol and T
Place of work Post and	: Nashik.
Number of post	: Tour Consultant (In-house): 3 Holidays Sales Executive (Field): 3 Franchise Sales Executive (Field): 1
Salary Event Flow	: Rs.1.0 to 2.0 Lakhs per annum. : Pre-placement talk & HR interview.

Documents Required: Resume (Updated), 2 Passport size photograph, College ID The pre-interview meeting will be held on 11-03-2022 at 3.00pm. Students should attend the meeting positively.

Register your name at Window no. 06 on or before day, 11th March 2022.

Placement Co-ordinator Prof. (Dr.) A B Chourasia Mob-9881251338



Prof. Dr. V. N. Suryavanshi

Principal

3/5/22, 4:55 PM

Dear Chourasia Sir,

Greetings from A-Cube Holidays!!

This is with reference to the discussion we had some time back regarding the recruitment drive for your This is write a pleasure talking to you and we look forward to meet you in person and take this forward.

As discussed, we would like to conduct a recruitement drive at your prestigious institute for your students. We are looking for Travel and Tourism department candidates for our Nasik & Pune office.

The openings which we are having right now are as below:

- 1. Tour Consultant (In-house):
- 2 Positions 2. Holiday Sales Executive (Field): 2 Positions
- 3. Franchise Sales Executive (Field):
 - **1** Position

The salary range will be around 1.0 – 2.0 Lakhs per annum. The details can be discussed and shared with you.

I am attaching the introduction of my company in detail. Request you to kindly suggest how we can take this forward.

Thanks & Regards

Abhijeet Dharankar

Winner of the Award for "Excellence in Tours & Travel Solutions!!"

Mob: 93252 15151 WhatsApp # 93252 15151

Office # FF-15, Thakker's Bazaar, New CBS, Trimbak Road, Nashik – 422002 Web: http://www.acubeholidays.com

Follow us on:





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List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/ institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	Shree Nasik Panchavati Panjrapole, Panchavati, Nasik Maharashtra-422003 (SNPP), Contact Details:- Mr. Uday Joshi info@snpp.in Associate manager 9226723622, 9226427447	2021-22	1.	2023	Study Tour at Chunchale Farm



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

Without Prejudice

Memorandum of Understanding (MOU)

Between

HPT Arts and RYK Science College, Nashik, Maharashtra- 422005

&

Shree Nasik Panchavati Panjrapole, Panchavati, Nashik, Maharashtra-422003 (5NPP)

This document constitutes as Memorandum of Understanding(MOU) between:

HPT Arts and RYK Science College, Nashik, Maharashtra- 422005

and

Shree Nasik Panchavati Panjrapole, Panchavati, Nashik, Maharashtra-422003 on

07 /10/2021

1.Aim of this MOU: Shree Nasik Panchavati Panjrapole (SNPP) have Cortified Organic Biodiversity Zone at Chunchale, Belgaon Dhaga, Sarul premises of Nashik. The Students. Researchers of HPT Arts and RYK Science College, Nashik, Maharashtia-422005 intend to carry out study, research activities & prepare the study, research reports related to Biodiversity Conservation, Water Conservation, Environment protection, Natural Resources development, Organic Farming. Eco friendly activities, Thriving Ecosystem etc. free of charge for social, educational, charitable causes. Vide this MOU both the parties agree for the same with mutual consent.

2.Objective:

The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

- 2a)To study, record, document, research the nature/biodiversity in general, prepare the valid project report(s) by the researcher(s) alongwith recommendation.
- 2b)To share the ideas of nature conservation, natural resources development.
- 2c)To share the data, information, research project reports.
- 2d)To create, develop the awareness regaining nature conservation, natural resources development within public through academic curriculum.
- 2e)To acknowledge / approve the submitted project reports of the researcher(s)
- 3)Terms Conditions of Study, Research & Development activities within Biodiversity Zone of SNPP:
 - 3a)This MOU shall be effective only after HPT Arts and RYK Science College, Nashik and Shree Nasik Panchavati Panjrapole (SNPP) mutually agreed the terms & conditions
 - 3b)The researcher(s) should apply to SMPP along with recommendation by college on letter head.
 - 3c)Full Names, Full address, mobile no, email ID, Education, Profession, Subject of Study & Research, Period of visits, Timing of visits, other relevant information should be mentioned in their application. Self-Certified Adhar Card Copy of each researcher should also be submitted along with the application form.
 - 3d)After agreed upon the terms & conditions of SMPP formal permission will be given to the researchers to carry out the study & research work at SNPP Chunchale, Belgaon Dhaga Blodiversity premises at the sole risks as to cost & consequences of the researchers, which will be carried out on an honorary Shramdan work basis on the permitted days only. They will have to show their original Photo ID Card to the security person at entry gate everyday/every time and should be shown whenever asked by SNPP authorities during their visit else the entry will not be permitted. The researchers will have to follow the rules. & regulations, terms & condition of the



an all conceleration orner and others should be submitted to starts within T(Ope) month of that report is finalized.

3f)Said study & research report can be published with SNPP's acknowledgement. Researcher(s) will be authorized to publish their study & research report, they will keep SNPP informed regarding publish of their report by providing the website/portal link, book/document code etc.

3g)Not more than 05 (Five) persons including researchers, assistants, helpers, associates etc. will be permitted to do their research & development activities on a single day Names, mobile nos, email id of the said team members shall be written in prior application & formal approval to the application shall be given by SNPP.

3h)If any researcher(s) doesn't follow institution's instructions, rules & regulations will not be allowed to carry out the study, research activities in SNPP premises & will be taken out of the premises immediately. Misbehaviour in any form by anybody will not be tolerated & lead to termination of his/her entry, which will be at sole discretion of SNPP. In such a scenario SNPP reserve the right to recover the damages & losses from such persons.

4. General Terms Of MOU:

4a)Duration of MOU: This MOU shall be operational upon signing and will have initial duration of 1(One) year i.e. on or before 07 / 10 /2022. All Activities conducted before this date within the vision/objects of this joint collaboration will be deemed to fall under this MOU.

4b)Coordination: In order to carry out and fulfil the aims of this MOU, each party to appoint an appropriate person(s) to represent its organization and to coordinate, implementation of activities. Full names, designations, Mobile nos, Email IDs of such persons will be incorporated in this MOU. -*-

4c)Financial Implementations: There is no financial cost, ilability in any manner whatsoever is involved in this MOU from both the parties. No right/title/interest in any manner will be created in SNPP's property and, or, otherwise by anybody. This research & development is carried out in good faith for charitable, environment preservation cause to support the Gaushala, Registered Public Charitable Trust. There will be no cost, enarge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid research & development is being carried out in the form of donation/shramdan without any direct / indirect cost, charges whatsoever.

4d)Confidentiality: Each party will maintain confidentiality regarding this MOU, research & development as far as possible, after executing this MOU.

4e)Termination of MOU: This MOU shall terminate any time with 1(One) month prior written notice to each other by both the parties without assigning any reason.

4f) Extension of MOU: This MOU will be further extendible by 1(Une) year, at the mutual consent of both parties on further mutually agreed terms.

4g)Communications: All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email 7 Registered Post A/D both the parties.



* (0-ordinator: FullName Designation Mohine Fundition D'HPT RYK: Jawale Chetan S. HOD. Profition 2412 Hogey 2001094 Qrediffmeillen 2) History : Nitthud Jagan Agale Farm Manager 9520204048 churcher @Snppin (Nich Snppin)

Page 3 of 3

4h)Addendum: Any addendum to this MOU shall be in writing & signed by both the parties. Herewith both the parties confirm that provide Herewith both the parties confirm that provisions in this MOU does not go against the rules Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU. IN WITNESS WHEREOF, the parties hereto have executed this MOU on orth October Jus . PRINCIPAL H.P.T. Arts / R.Y.K. Sc. College Signature, Name, Deskinakion, Date, Seal For HPT Arts and RYK Science College, Nashik, Maharashtra, 422005 (Hay Shipar Jeshi, Associane manager, 07.10 2021 Bizale Sagar Vithal Agale, Associate Manager of 10-201 Signature, Name, Designation, Date, Seal MANAGER For Shree Nasik Panchavati Panjrapole SHREE HAS, R PANCHA ANURAPOLE PANCHAVATI, NASHIK-422 003 Witnesses Full Name, Signature, Date 1) Bylti Shrikrishma Adhyaro 2) Nilesh Tshwar Sachder S.S. Amod 41

SHREE NASIK PANCHAVATI PANJRAPOLE

Panchavati, Nashik- 422 003 Tel .0253- 2514007, 2512137, Email : Info@sopp.in Website : www.sopp.in Mob.: 9226891277

120	website : www.snpp.in M	ob.: 9226891277
No. 100	Entry pass	Date -3rd April 202:
Lead Visitor' s Full Name	Dr el 1 to 1	
Lead Visitor's Full Address	We Chelon Jourale	
	H.Y.I. K.Y.K College	
	Rasik.	
Lead Visitor's Mob.No :	9/10077708 60	Email ID :
Reference Name	1922/10869	Mat No:
Date of Visit	17th Apil and	Vehicle No -
Time Slot	9 am to 11 am 1	3em to 5em
Total no.of visitors		Inwords
Full Name of the vistors & Mobile No.		The person
	Full Name	Mobile No
1)	Dr. Chetan Tastale + 50	
2)	Jane	
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		
/isit at	Chunchale / Panchavati / Peth Road	
	Authorised Signature Gate Keeper's Signatu Grocelor 3-4-23 Date & time S - SO PM Date & time	re Farm Supervisor's Signatur
ote:- 1) Aforesaid entry Pa	iss is valid for the date & time as mentioned above.	
2) Photo ID Proof of	each visitor should be carried alongwith the visitor & shown at the entr	ry gata.
3) Right of admission	reserved. Admission is subject to change/cancelled any time without	assigning any reason.
It is at the sole dis	cretion of the institution (SNPP).	
4) Other Terms & Co	nditions, Rules & Regulations @ SNPP Chunchale which are attached	d with this entry pass, as
applicable will have	ve to be followed in letter & spinit.	

5) This Entry pass is to be handed over at Chunchale entry gate to the gate keeper.

Thanking you.

Signature : Shree Nasik Panchavati Panjrapole

ng

Notice

All Msc.1 and Msc.2 students, we have organised study tour at snpp chunchale farm, near Satpur Nashik on 17th April, 2023, gather on the gate at 8 am.

With following objectives:

1. To visit an apiary.

2. To visit vermicomposting unit

3. To visit a duck farming

4. Organic horticulture practises

5. Indigenous cow farming.

6. To observe different rain water harvesting technique.

7. Bird habitat and nesting.

Teacher incharge:

1: Miss Revati Belgaonkar

2: Mrs Sukhdha Kulkarni

1× 80 Machik

Hod. Sign.

Dr. C. S. Jawale Head of the ZOOLOGY DEPT. J. P. r./R. Y. K. College, Neura-

DATE: 1 St A pril 2023

To, Hon. Managing Trustee, Shree Nasik Panchavati Panjrapole Opp. Nimani Bus Stand, Panchavati, Nashik-422003

Subject: Permission for a field study tour at Chunchale farm, Nashik

Respected Sir,

Under the curriculum of S.P.P. University, our Postgraduate students of zoology have compulsory study tours. They are expected to observe vermicomposting unit, beekeeping unit, duck farming, Indigenous caw farm, and other organic agricultural practices. In this concern, kindly grant us your permission to visit Chunchale farm on the 17th April, 2023. Following students and teachers will visit your farm. They will follow all the norms and rules as per your directions

We appreciate your help with the Academics.

Thanking you,

-el Epunte HOD;

Zoology Dept Read of the ZOOLOGY DEPT P. 1/R. Y.K. College, Neur

Participants list attached.



meshpanz

Principal, H.P.T. Arts & R.Y.K Science College Nashik-5 **PRINCIPAL** H.P.T. Arts / R.Y.K. Sc. College Nasik - 5.

Study tour report

Date: 17 April 2023

Field visit of Msc.1 and Msc.2 Zoology student to Chunchale farm of Shree Nashik Panchavti Panjalpol, Nashik.

Zoology Department has organised field trip for MSc 1 and Msc2 students on 17th April, 2023. It was a compulsory visit for both classes. We visited Chunchale farm, of Shree Nashik Panchavati Panjalpol, Nashik, Maharashtra. Out of 57 registered students 53 attended the tour. We started tour at 9:00 am with orientation from the PRO and farm manager of SNPP Chunchale. Our primary interest was to learn more about the biodiversity. The place we have selected for the field trip is enrich of biodiversity of various different cultured sector in 700 acres of land having different zones of biodiversity such as Api culture unit, vermiculture unit, duck farming, horticulture, cow farming and an organic farming unit with a varieties of plantations. We have also seen 5 to 6 water body with different aquatic organisms and also different varieties of bird visited the place.

The main motive of the field visit was to show the different culturing methods to the students and acquiring the knowledge. Student has seen the different biodiversity of insects also which have birds in different fields like guava, mango, jamun, animal fodder, horticulture plants. Also student learn about different water harvesting systems of rainwater and how effectively used in fields and other purpose to maintain the 700 acres of land and its duty as well as the sustainable biodiversity. One more very effective applied aspect of zoological subjects that is application in apiary. How bees are cultured domesticated and used for the pollination purpose the beneficial uses, commercial Honey extraction. Also application and vermiculture how vermicompost is cultured and maintained. Different types of bird nest was in which were of different size located on the different places for the resting and staying of the birds located in that place. One of the main motive of the bird's nest is the conservation of different birds. In which owl is one of them which is an extinct species which is ecological important.

Students got a brief knowledge of about how organic farming is done how its beneficial for the environment and also how its cost reducing. Simultaneously with the knowledge of the sectors which help them with the zoological Enterprises it also help for the development of entrepreneurship in them. Student experience free of pollution area with is highly organised with a rich organic agriculture practices. A place where biodiversitical studies and microscope study can be done.

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200LOGY DEP1



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	students participation for study tour 1		
sr. no.	students name	designation	
1	Adhav Pranjal Sanjay	Ty.Bsc	
2	Anwade Anjali Rushikesh	Ty.Bsc	
3	Aver Rinku Ramsing	Ty.Bsc	
4	Bora Krishi Anand	Ty.Bsc	
5	Chandramore Shradha Madhukar	Ty.Bsc	
6	Deore Divya Rupsing	Ty.Bsc	
7	Dhikale Rutuja Sanjay	Ty.Bsc	
8	Dhumal Nirmala Manoj	Ty.Bsc	_
9	Girme Aarya Rupesh	Ty.Bsc	_
10	Joshi Rashi Rajesh	Ty.Bsc	
11	Kale Purvesh Aananda	Ty.Bsc	
12	Khan Mohammed Kaif Juber	Ty.Bsc	
13	Kukloriya Tejaswini Ritesh	Ty.Bsc	
14	Nikam Sakshi Devendra	Ty.Bsc	
15	Pandey Ritu Ganesh	Ty.Bsc	
16	Patil Bharat Sanjay	Ty.Bsc	
17	Patil Sakshi Sarierao	Ty.Bsc	
18	Rai Raas Ashok	Ty.Bsc	
19	Savved Maherin Naim	Ty.Bsc	
20	Shaha Jainam Chetan	Ty.Bsc	
21	Shaikh Maheveesh Ishtiyaque	Ty.Bsc	
22	Singh Priva Rambali	Ty.Bsc	
23	Surwade Shruti Manohar	Ty.Bsc	
24	Chavan Harshal Gopichand	Ty.Bsc	
25	Soni Palash Shankarrao	Ty.Bsc	
26	Vidva Swami	Ty.Bsc	
27	sureka chavan	Msc 2	
28	mansi neve	Msc 2	
29	alfa singh	Msc 2	
30	sara azmi	Msc 2	
31	jagruti barhate	Msc 2	
32	bhoomi kaloge	Msc 2	
33	bhoye jayashri	Msc 2	
34	shweta borade	Msc 2	
35	jayashri ghotekar	Msc 2	_
36	nikita jawle	Msc 2	_
37	gayatri kale	Msc 2	_
38	palavi kale	Msc 2	_
39	zulfin kotwal	Msc 2	_
40	kalyani monde	Msc 2	
41	pooja rajpurohit	Msc 2	



ZOOLOGY DEPT.

42	aarti shinde	Msc 2
43	shewta singh	Msc 2
44	Zete Dhanshree Ravsaheb	Msc 1
45	Khairnar Madhuri Vasant	Msc 1
46	Pawara Roshani Manilal	Msc 1
47	Vidhate Aniket Balu	Msc 1
48	Wature Rohit Suresh	Msc 1
49	Gaikwad Chaitanya Govind	Msc 1
50	Govind Mahima Ramesh	Msc 1
51	Jadhav shweta shivaji	Msc 1
52	Mahajan Neha Kailas	Msc 1
53	Pardeshi Divyashri Santosh	Msc 1
54	Pawar Poonam Babasaheb	Msc 1
55	Ruikar Devyani Rajendra	Msc 1
56	Shaikh Shifa Javed	Msc 1
57	Tamboli Mehernaz shabbir	Msc 1



Mrs. Selenaden Kulkali

Ms. Revati Belgaankas

-cp

Plead of the ZOOLOGY DEPT.

	students participation for study site	tour attendance on	مايدة فاستا	
sr. no.	students name	designation		
1	Adhav Pranjal Sanjay	Ty.Bsc	Rright	
2	Anwade Anjali Rushikesh	Ty.Bsc	Anes	
3	Ayer Rinku Ramsing	Ty.Bsc	Hurre-	
4	Bora Krishi Anand	Ty.Bsc	Baranni	
5	Chandramore Shradha Madhukar	Ty.Bsc	Charmander	
6	Deore Divya Rupsing	Ty.Bsc	Divia Rypul	
7	Dhikale Rutuja Sanjay	Ty.Bsc	Atopha	
8	Dhumal Nirmala Manoj	Ty.Bsc	(Dome)-	
9	Girme Aarya Rupesh	Ty.8sc	Comut	
10	Joshi Rashi Rajesh	Ty.Bsc	boob-	
11	Kale Purvesh Aananda	Ty.Bsc	Ruveah	
12	Khan Mohammed Kaif Juber	Ty.Bsc	Khammilent	
13	Kukloriya Tejaswini Ritesh	Ty.Bsc	WTRE	
14	Nikam Sakshi Devendra	Ty.Bsc	N.Kondepo-	
15	Pandey Ritu Ganesh	Ty.Bsc	Aprile	
16	Patil Bharat Sanjay	Ty.Bsc	Reality	
17	Patil Sakshi Sarjerao	Ty.Bsc	Derberth	
18	Rai Raas Ashok	Ty.Bsc	Racis ytch .	
19	Sayyed Maherin Naim	Ty.Bsc	Kandes	
20	Shaha Jainam Chetan	Ty.Bsc	Aucre	
21	Shaikh Maheveesh Ishtiyaque	Ty.Bsc	Monon.	
22	Singh Priya Rambali	Ty.8sc	Empa	
23	Surwade Shruti Manohar	Ty.Bsc	Borndm-	
24	Chavan Harshal Gopichand	Ty.Bsc	Anal	
25	Soni Palash Shankarrao	Ty.Bsc	Sonolopan	
26	Vidya Swami	Ty.8sc	Vwami	
27	sureka chavan	Msc 2	they show	
28	mansi neve	Msc 2	Neupose.	
29	alfa singh	Msc 2	1000re	
30	sara azmi	Msc 2	SAR	
31	jagruti barhate	Msc.2	J.B. Barne	
32	bhoomi kaloge	Msc 2	Comiles-	
33	bhoye jayashri	Msc 2	Drongauin	
34	shweta borade	Msc 2	porsastre	
35	jayashri ghotekar	Msc 2	Constations	
36	nikita jawle	Msc 2	Nawall	
37	gayatri kale	Msc 2	benter	
38	palavi kale	Msc 2	de volt	
39	zumn Kotwai	Misc 2	Down	
40	Karyani monde	IVISC Z	100030 LLLL	



41	pooja rajpurohit	Msc 2	Roga
42	aarti shinde	Msc 2	zanin.
43	shewta singh	Msc 2	Share
44	Zete Dhanshree Ravsaheb	Msc 1	Marinen
45	Khairnar Madhuri Vasant	Msc 1	DWKgunt
46	Pawara Roshani Manilal	Msc 1	Soshani
47	Vidhate Aniket Balu	Msc 1	Warn
48	Wature Rohit Suresh	Msc 1	MARS
49	Gaikwad Chaitanya Govind	Msc 1	Gehenver.
50	Govind Mahima Ramesh	Msc 1	Cherry .
51	Jadhav shweta shivaji	Msc 1	forday
52	Mahajan Neha Kailas	Msc 1	Neha
53	Pardeshi Divyashri Santosh	Msc 1	given
54	Pawar Poonam Babasaheb	Msc 1	Ragiam
55	Ruikar Devyani Rajendra	Msc 1	mm.
56	Shaikh Shifa Javed	Msc 1	Sstert
57	Tamboli Mehemaz shabbir	Msc 1	famboli

Mrs. Sulibadia Kullutin

Ms. Revoli Belgoontas



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Nashik, Maharashtra, India 1st Private Street, Ashok Samraat Colony Rd, Datta Nagar, Chunchale, Nashik, Maharashtra 422010, India Lat 19.962985° Long 73.721694°



Nashik, Maharashtra, India Unnared Road, Ambedkar Nagar, Chunchale Nashik, Maharashtra 422213, India Lat 19.94963* Long 73.710344* 17/04/28 10-33 AM GMT +05:89 Nashik, Maharashtra, India Streit Number I. Ashak Sam asi Oxlow Rd, Data Nagar, Churchan, Nashik, Maharashtra 622010, India Lan 1936311 Long 78,7279275 1794,223 DataB AM OMT +05:30



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Permanently Affiliated to Savitribai Phule Pune University (ID No.: PU/NS/AS/001(1924) NAAC Re-Accredited: 'A' Grade | ISO 9001:2015 Certified | Best College award by SPPU 2019-20

List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/ institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
	Civil Hospital (Vibhagiya Sandarbh Seva Rugnalaya) Nashik	2021-24	1.	2023	Blood Donation camp



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

Without Prejudice, Memorandum of Understanding (MOU) Between Gokhale Education Society's HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 &

Civil Hospital (Sandarbha Seva Rugnalaya) Nashik, Maharashtra

This document constitutes as Memorandum of Understanding(MOU) between HPT Arts and PYK. Science College, Nashik, Maharashtra- 422005 and Civil Hospital. (Sandarbh - Serie Praymal cont Nashik, Maharashtra on 1st January, 2021

J. Aim and Objective's of this MOU:

The Aim and objective of this MOU is to express the willingness of both parties to engage in an effect to promote collaborative activities in the following areas:

1a) Blood donation camp

- 1b) Health Awareness camp and campaign
- Guest lectures

ld) Health Check-up camps.

le) Visit to Hospital.

2. This MOU shall be effective only after HPT Arts and RYK Science College, Nashik and Civit Hospital (Sandarbha Seva Rugnalaya) Nashik, Maharashtra mutualiy agreed the terms & conditions.

3. General Terms Of MOU:

3a) Duration of MOU: This MOU shall be operational upon signing and will have initial duration of 3(Three) years i.e. on or before 31st December, 2024. All Activities conducted before this date within the vision/objectives of this joint collaboration will be deemed to fall under this MOU.

4b) Coordination: In order to carry out and fulfil the aims of this MOU, each party to appoint an appropriate person(s) to represent its organization and to coordinate, implementation of activities Full i names, designations, Mobile nose, Email IDs of such persons will be incorporated in this MOU.

4c) Financial Implementations: There is no financial cost, liability in any manner whatsoever involved in this MOU from both the parties. No right/title/interest in any manner will be created in the either of college properties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's and Society benefit at large.



Page 2 61 1

4d) Confidentiative: Each party agrees that it shall not, at any time, after executing the antivities of this MOU, will disclose any information without motual consent. Both the parties are bound to share data collected during the said activities.

40 Termination of MOU: This MOU shall terminate any time with 1(One) month prior written notice to each other by both the parties without assigning any reason.

4D Extension of MOU: This MOU will be further extendable by 1(One) year, at the mutual consent of both parties on further mutually agreed terms.

(g) Communications: All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email followed by Registered Post ArD to the other party.

41) Addendum: Any addendum to this MOU shall be in writing & signed by both the parties.

Herewith both the parties confirm that provisions in this MOU does not go against the rules and regulations of the Government policies.

Aforesaid all terms & conditions also apply to any subsequent Addendium to this MOU.

IN WITNESS WHEREOF, the prifiles hereto have executed this MOU on 1° January, 2021





Page 3 of 3

Witnesses: Full Name, Signature, Date 11113	
1) pr.s. B. Pagul	21 M.R. BICKUNE 17
3)	41
	CX SCI





महत्त्वाची सूचना रक्तदान हेच जीवनदान!

वरिष्ठ व कनिष्ठ महाविद्यालयातील सर्व शिक्षक व शिक्षकेत्तर कर्मचारी यांना कळविण्यात येते की, बुधवार, दि. १९ एप्रिल २०२३ रोजी महाविद्यालयातील राष्ट्रीय सेवा योजना विभाग व विभागीय संदर्भ सेवा रुग्णालय, नाशिक यांचे संयुक्त विद्यमाने रक्तदान शिबीराचे आयोजन करण्यात आले आहे.

नाशिक शहरात सध्या मोठ्या प्रमाणात रक्ताचा तुटवडा असून रुग्णांच्या जिवीताचे रक्षण करण्यासाठी जास्तीत जास्त रक्तदानाची आवश्यकता आहे.

तरी महाविद्यालयातील सर्व शिक्षक व शिक्षकेत्तर कर्मचारी / रक्तदात्यांनी रक्तदान करुन रुग्णसेवेच्या राष्ट्रीय कार्यात सहभागी व्हावे.

वार व दिनांक वेळ स्थळ : बुधवार, दि. १९ एप्रिल २०२३ : सकाळी ०९.०० ते दुपारी ०४.०० वाजेपर्यंत : सेमिनार हॉल (भूगोल विभागाजवळ)

Fal

(प्रा. राकेश वळवी) रासेयो अधिकारी

रासेयो अधिकारी

(डॉ. सौ. एम. डी. देशपांडे) प्रभारी प्राचार्या

	Gokhale Education Soc	ciety's
	HPT ARTS & RYK SCIENCE COLLEGE	
	ID No. : PU/NS/AS/001(1924) NAAC RE-ACCREDITED 'A' GRADE ISO 9001 : 2015 CERTIFIED COLLEGE SPPU Best College : 2019-2020 JR. COLLEGE CODE NO. : J13.17.003	Phone : Sr. College : (0253) 257215 Jr. College : (0253) 257948 Fax : (0253) 2573097 Email : prinhptryknsk@rediffmail. Website : www.hptrykcollege.com

Ref. No.

Date: 20 April 2011

Blood Donation Camp (19th April, 2022)

The Blood Donation Camp was organized by the National Service Scheme Department of HPT Arts and RYK Science College, Nashik on 19th April, 2023. The camp took place at Seminar Hall of HPT Arts and RYK Science College, Nashik. The Blood Donation Camp was inaugurated at 9:30am. The Blood Donation Camp was inaugurated by Prof. Dr. M.D. Deshpande, Principal of HPT Arts and RYK Science College, Nashik. The Vice Principals Dr. Pranav Ratnaparkhi and Dr. L.P. Sharma were present for the camp. Total 107 NSS volunteers and 6 committee members were present for the programme.

The blood collected from this camp was to be given to the Vibhagiya Sandarbh Seva Rugnalaya, Nashik. Certificates were given certificates to those who donated the blood. To watch over the entire process and to collect the blood, a team of ten doctors were put in charge. The college had also arranged for a resting room for anyone who felt dizzy or sick after donating blood. Volunteers from National Service Scheme had come to help the college to organise the blood donation camp. Total 124 blood bags were collected in the camp.

After the completion of the blood donation, the Principal thanked and appreciated everyone present in the camp. The day ended with the National Anthem and a heartfelt vote of thanks from the Principal of the school.

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(NSS Programme Officer) **NSS Programme Officer** HPT Arts and RYK Science College Nashik-5



Prof. Rakesh Valvi

(NSS Programme Officer) **NSS Programme Officer** HPT Arts and RYK Science College Nashik-5







रक्तदान शिबीर संयोजक गौरव समारंभ माहे जुन - जुलै २०२३

* प्रशस्तिपत्र *

मा प्राचार्य, एन पीथि कला व आर्वाय के विज्ञान महाविद्यालय, नाशिक

आपण जिल्हा शासकीय रुग्णालय व विभागीय संदर्भ सेवा रुग्णालय, नाशिक येथील शासकीय रक्तपेढी करिता वेळोवेळी एच्छिक रक्तदान शिबीरांचे आयोजन करुन जीवनदानाचे प्रशंसनीय कार्य केलेले आहे. त्या करिता हे प्रशस्तिपत्र आपणास प्रदान करण्यात येत आहे.

उपसंचालक

आरोग्य सेवा, नाशिंक मंडळ, नाशिक

जिल्हा शल्य चिकीत्सक

जिल्हा रुग्णालय, नाशिक

विभागीय रक्त संक्रमण अधिकारी नाशिक मंडळ, नाशिक



Blood donation Camp in collaboration with civil hospital

19 April 2023







Blood donation Camp in collaboration with civil hospital

19 April 2023




Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College, Nashik-422005 Department of National Service Scheme Blood Donation Camp

Attendance Sheet

Date- 19 April 2023

Sr.	Name of the Volunteer	Class	Contact	Signature
No.			72 1988 9911	Japant
1.	Diksha K. Gongurde.	5.9. BSC	1213303311	Parison
2.	Prajakta A. Bhaleraw.	S.Y. Bser	9004079725	- his
3.	Khushi U. Datre	5.4.BSC	9158829156	KENTE
4.	Akach G. Jeiuskas	5.9.85C	8329670455	Bucoulace
-	Hellie B. Chubber	34-85C	8208977043	(Hathanak
6	Speha S. parse	SyBsc	9130538513	Acr
7	Shaw Shikat Nikam	SYBSE	7249605573	- Anon
1	Wires by Obonoode	SYBSC	9322866025	Vitcon
0	1° shad Sanale	SY.B.S.	9156971802	AS'
a	Pagore Mayori S	THESE	7218897533	Maguit
J-	Barrents Remshankan Varma	TYBSC	7028683682	Hang
10	Tell or D. Jalhav	TYBA	7391852173	Jaka
10	Radhika T. Sutar	SYBSC	9859486730	5 Asturen
12	Gunan R. Patil	34850	8401347403	four
14	watel is iteles	AY KSC	952206546	4 Pere
11	NUMU SCONDUC	TYRSC	8621932123	-ARIAN?
15	Aware Niking Freedo	TYRA	9370485234	FBet
16	Kaitiki utum barde	J TYRA	9561322732	R Bitures

Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College, Nashik-422005 Department of National Service Scheme

Blood Donation Camp

Attendance Sheet *

Date- 19 April 2023

1	and the statement	Class	Contact	Signature
Sr. No.	Name of the volunteer			
18	Vaibbar N. Badad	TYBA	8329418022	OBadad
19	Dirution P. Patil-	5. J. B. 56.	1972235238	applitts-
20	To C North	SYBA	9420683498	JAN ALLE
20	Day Strand	S.Y.BSC	9325004024	Bentif
22	Pakeli Valdya	SYBSC	8308352369	Fakili
22	Disho Songwane	SYBSC	9960722739	\$ sha
911	Puluita Saral	SYBOC	80/00 86835	Esores
25	Manini unagh	SYBSC	9146638964	TUCH MAN
00	Saurabh Praiapati	SUBSC	705846479	1 Bales
20	N. El Stelurol	-TYBA	8600151951	South
28	Sahil Sunil Sonar	TYBES	7588996670	- Stanon
29	Kelilli R. Malt	5.4.BSL	7249491613	Kmall
30	Dawlod P. Galkwad	S 4 BSC	820840830	Stake
31	priva 1. Lodha	s-ybsc	917530114	o Roche
20	Prija - Frankow	SYBSC	\$ 956037768	gh-
32	Smushin & Jaanse	1	B.R.	Y.E.
			E(Nen	180.5
-			10100	10
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Gokhale Education Society's

H.P.T. Arts and R.Y.K. Science College, Nashik-422005

Department of National Service Scheme

Blood Donation Camp

Attendance Sheet

Date- 19 April 2023

Name of the Volunteer	Class	Contact	Signature
ohum . R. lad	3485C	846100,996	Staten,
Kamal, R. Datil	54B5C	7620567208	Contin
Soural S. Chaure	SYBSC	7038123332	Chark
Prapial V. Patil	SYBSC	8767549336	Repati
Palini - R. Bhamath	SYBSC	9017092661	Robin .
Magai Vich Stange	SYBOC	952906 4394	-1304
Munal K. Obel.	SYBSC	8605395326	DEllos .
Tronal R. One	54.BSC	9766 326204	+iteger
P. P. A. Malika	SYBSC	9096363951	Bujali
Dungthin Mana hubberity	SyBso	91 58655094	Block
Rekoli Nilesh Jadhar	SyBSC	899912564	Sakili .
Dive Navnath Malode	Sybsc	8308534881	- S.N.malaore
C I C Guikard	SYBA	830835390	Chains
Ressue Mahoon Cham	Sybee	7822-87939	MBBidde
mayar V. Royfat	SYBSC	76 202 39 886	hope.
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and a state of the	SYBSL(C.S)	8805834377	3.59
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	Name of the Volunteer Bhakti · R · Lad Ko mow · R · Patil Sacira V. S · Chacin Peanjal V · Patil Rehin · R · Bhamath Mogal Vosh Stonad Mogal Vosh Stonad Mogal Vosh Stonad Mogal Vosh Stonad Mogal Vosh Stonad Mogal Nosh Stonad Mogal Nosh Stonad Dianashi Mehta Dheinashi Mano hubhujh Sakshi Nitesh Jadhav Diva Navnath Majode Swati G Gaikwald Bidue Mohesh Sham mayar y · RojPat Dhisoj · N. Diviram pe Soykumor & Terekor	Name of the VolunteerClassBhakhti · R · Lad5485CBhakhti · R · Lad5485CKo mal · R · Patil5485CSacira V. S · Chacing5985CSacira V. S · Chacing5985CPeanjal V · PatilSYBSCRahini · R · BhanathSYBSCMogal Nosh ShonadSYBSCMogal Nosh ShonadSYBSCDigal Nosh ShonadSYBSCDiangali MehtaSYBSCDheinashin Mano hubhybel SyBSCDheinashin Mano hubhybel SyBSCDiga Navnath MalodeSYBSCSwati G GaikwardSYBSCSwati G GaikwardSYBSCSwati G GaikwardSYBSCDiya Navnath MalodeSYBSCDiya Navnath MalodeSYBSCDiya Navnath MalodeSYBSCDiya Navnath ShamSYBSCDhisoj · N. DipirambeSYBSCDhisoj · N. DipirambeSYBSCDhisoj · N. DipirambeSYBASoykumar S TouckorSYBA	Name of the VolunteerClassContactBhakhti R . Lad5485C84440019996Ko Mal. R. Patil5485C7620567208Saura V. S. Chachy5985C7038193332Psanjal V. Patil5485C8767549336Rohini - R. Bhanath5785C8767549336Mogal Yosh Sharad5485C9067092661Mogal Yosh Sharad5485C9529067337Mrunal. K. Ohol.SYBSC90636326Tina. V. Patil54.85C9766326326Tina. V. Patil54.85C97663263951Dheinashin Mano LubhyinSyBSC9096363951Dheinashin Mano LubhyinSyBSc9158655094Sakshi Nilesh JadhavSyBsc8308534881Swati G GaikwadSYBSC7822879392Bidue Mahesh BhamSyBSc7822873932Dhisoi. N. Dhoram beSiles827554493Dhisoi. N. Dhoram beSiles827554493Super S. TurkerSyBSc827534374Soykumer S. TurkerSyBSc825834374Soykumer S. TurkerSyBSc82583437

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Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College, Nashik-422005 Department of National Service Scheme

Blood Donation Camp

Attendance Sheet

	Date- 19 A	prii 2025		Cionatura
Sr.	Name of the Volunteer	Class	Contact	Signature
19	Quel B Tashi	SYBIC	3022245677	Digu
20	Deadin Shivai Landje	STBSC	9834253200	Planda
21	Achurit D. Ubale	SYBSC	72.62975791	Almit-
22	Theosla Kothos	SYBSC	8055022181	Sher
23	Puting K. Khaiznar	SYBSC	8767086970	Thaiasar
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22	Red A charlistic	S.Y.Bsc	7249491613	Blandid
32	Bahshan Chandela	S. Y.BSL	8554888456	Permana
21	Siddlant Sonawane	SM BSC	\$48483868	7 alun
25	Doubers, chank	8YBRC	7666833560	Der.
20	Mangeres Mangeres	SYBSC	1720800571	Anger
37	Jaai. J. Najarde Sneha S. Kanhe	SYRSC SYRSC	8421544946 902234310	Magina 3 Marte

Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College, Nashik-422005 National Service Scheme Unit D-022 Attendance Sheet

Sr. No.	Name of the Volunteer	Class	Contact	Signature
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2)	Kanchan . S. Shah	S.Y.B.A	1991	Stanty
3)	Nemelani J. Hautan	SY'BR		Nochi
47	Nikita M. singh	S.Y.B.A		Cikiter
5)	Prechi Kannyjika	5. Y.B.A		Prebb.
6)	Presand .V. Maked	S. Y.BSC		Receind.
7	Shubhada G- thank	S14B2r Biotah	1000	(Subar-
8	Sakshi A Kulkarni	TYBSC		SAK
9)	Bhavana B. Jagtap	TYBSC		Diegten
10]	Sahaher D. Songwone	7-1836 moning	10.742	Satorn .
nj	Pooja D. Rathod	T.Y. Bacchemistr	-	P.D.Ruthor
124	Riddhi A. Vaidy 9	TYBSC tru	the set	Ruy.
134	Rani Pawar	TY BSC chemistry	Same	Deriland
144	Rashi Rawindeg Baway	TYBSC Chemistery	1.11	OKraught -
15)	Namsata Dhanai Charles	TY BSC. Cham		Stant
16]	Mayuri Manoj Bagul.	TYBSC Chemily		Mayund
17)	Divya . Uttam Bayly	THIS SC CHICM	and the	Berger
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(ID)	Nity Granesh Pandit	TYBS C (Chemity	COST WYN han als	pitat:

Sr.No.	Name of the Volunteer	Class	Contact	Signature
17	Nikita Pravin Patil	14850	8767144384	Platil.
18	Banskeuti D. Jadhav	TYBSC	7057868006	Gadhav;
19	Jayah C. Pagas	SYBS (Bid)	\$329866287	Spages
20)	Robel Cheipal	SUBA		abuff-
121	from Pawoz	SYBSE		Princip
22)	Akshay Kamble	SYDA		AS
23)	Diya Navnath Malode	Tiybse		gomatat
24)	Dry anothera. P. Halfe	SYBA	9637400494	OALL
25)	Arup v. Kulkarni	SY-RSC-Bioket	9322174193	Aup.
26)	Scham P. Tarle	SY-BEC	8446581612	Ale A
27)	Sonika R. Jadhav	S.Y.B.SC	9322659368	Sombe
28	Depesh D. Rachhav	SYBSC	9096497371	Dipah
29	swalaha y pai	SYBSC	9284409446	stiveray
30	Weha. R. Dixit.	S.Y.B.A.	8446220389	Neta
31	Sokshi S. Jain	5.4.B.A	9890729035	Same
32	Liften V Partin	SYBA	7218 082621	1 Piti
33	Pradie Shivaji Landge	T.Y.BSC	9834259200	Clandy
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Permanently Affiliated to Savitribai Phule Pune University (ID No.: PU/NS/AS/001(1924) NAAC Re-Accredited: 'A' Grade | ISO 9001:2015 Certified | Best College award by SPPU 2019-20

List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/institution / industry/ corporate house with whom the MOU/ collaboration/linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
	MAESA Foundation, Pimple Gurav, Pune- 411061 Maharashtra		1.	2023	Delivered Lecture by Dr. Auti on the Floral Diversity of Plateaus and Screening the documentary on Anjaneri- "The Hidden Treasure"
1.		2021-25	2.	2023	Delivered Lecture by Dr. Auti on "Cultivation Conservation and Promotion of Millets"
			3.	2023	Delivered Lecture by Tahsin Kazi on "Millets for Women's Health"



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5



10 Elite, Kadam-Jagtap Associates, Common Building, A1-304, Pimple Gurav, Pune-411061 Reg. No. 205481 Contact: 9096132046 email. mayesaenv@gmail.com

Memorandum of Understanding (MOU)

Between

Department of Botany, Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College, Nashik,

Maharashtra - 422005

&

MAESA Foundation, Pimple Gurav, Pune -411061 Maharashtra

1. Aim of this MOU:

Knowledge exchange for students and staff training through workshops, seminars, and guest lectures, visits to laboratory, student's projects.

2. Objectives:

The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

- 1. Internship/ projects
- 2. Industrial visits
- 3. Knowledge sharing
- 4. Joint research and publications
- 5. Resources sharing and exchange

This MOU shall be effective only after Department of Microbiology, HPT Arts and RYK Science College, Nashik, and MAESA **Foundation**, **Pimple Gurav**, **Pune** mutually agree the terms & conditions.

3. General Terms of MOU:

The terms and conditions are as follows:

- This MoU shall be operational upon signing and will have initial duration of 5 (Five) years that is from 1st November 2021 to 31st October 2026. All activities conducted during these dates within the vision /objects of joint collaboration will be deemed to fall under this MoU.
- 2. In order to carry out and fulfil the aims of this MoU, each party to appoint an appropriate person(s) to represent its organisation and to coordinate, implementation of activities. Full names, designations, mobile numbers, Email Ids of each person will be incorporated in this MoU.

- 3. There is no financial cost; liability in any manner whatsoever is involved in this MOU from both the parties. No right/title/interest in any manner will be created in the either of college properties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's and teacher's benefit at large.
- 4. Each party agrees that it shall not, at any time, after executing the activities of this MOU, will disclose any information without mutual consent.
- 5. All communications by both the parties shall be done by email, ordinary post. Only in case of termination of MOU communication will be done by email followed by Registered Post A/D to the other party.
- 6. In order to promote Academic and Research co-operation between the students and faculty of both the institutes, it is agreed that the areas like Academic activities, Placements, Joint collaborative research activities and Students practicals etc. of co-operation should be developed.
- 7. It is agreed between two institutes will participate / undertake the above-mentioned activities with prior information from the Head of both institutes.
- 8. Other common activities that could help to enhance co-operation, such as joint seminars, field visits, awareness programme, exhibitions etc.
- 9. The data obtained jointly by research workers on mentioned area will be the property of both the institutes and due credit should be given to individuals or institutes involved. Research workers of both institutes will be allowed to present and publish research work with the permission of Institutes, which will be furnished by mutual consent.
- 10. This MOU will be further extendible by 2(Two) year, at the mutual consent of both parties on further mutually agreed terms.
- 11. The term of this agreement may be amended at any time by mutual written consent of the parties.
- 12. Either company or Institution may terminate this agreement by giving prior notice to other institution any time in the study period if desired. In case of termination, the academic programme of the students currently enrolled should not be affected.
- 13. Any addendum to this MOU shall be in writing & signed by both the parties. Herewith both the parties confirm that a provision in this MOU does not go against the rules and regulations of the Government policies.



MAESA FOUNDATION 10 Elite, Kadam-Jagtap Associates, Common Building, A1-304, Pimple Gurav, Pune-411061

Reg. No. 205481 Contact: 9096132046 email. mayesaenv@gmail.com

Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU.

Hence the memorandum of understanding is signed.

Vide this MOU both the parties agree for the same with mutual consent.

IN WITNESS WHEREOF. the parties hereto have executed this MOU on 1st November 2021

Dr. V.N. Suryavanshi Principal, HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Contact No. 9881059272 E mail- prinhptryknsk@rediffmail.com

Dr. S. L. Laware Director, MAESA Foundation, Pune Mobile No. 9822742384 E mail: mayesaenv@gmail.com

Prof (Dr.) S. G. Auti

Professor & Head, Department of Botany HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Contact No. 9423080468 autisanjay66@gmail.com

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1) Dr. K.V.C. Gosavi Assistant Professor, Department of Botany

Department of Botany Contact No. 9421570980 kumarvinod@hptrvkcollege.com

rachiered.

2) Dr. P. U. Ratnaparkhi

Coordinator, IQAC Co-ordinator, HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Mobile No. 9823016230 Email: pranavr1180@gmail.com

Witnesses:

1) Chaitali P. Kshirsagar Director, MAESA Foundation, Pimple Gurav, Pune- 411061 Maharashtra Mobile No. 9096132046 E mail: mayesaenv@gmail.com

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2) Mrs. S.S. Laware Member Advisory Board, MAESA Foundation, Pimple Gurav, Pune-411061 Maharashtra Mobile No. 9011512513 E mail: savitaslaware@gmail.com







10 Elite, Kadam-Jagtap Associates, Common Building, A1-304, Pimple Gurav, Pune-411061Reg. No. 205481Contact: 9096132046email. mayesaenv@gmail.com

Ref. MF/ 016/2021-22

Date: 23/02/2022

To, Dr. Tahsin S. Kazi Department of Botany HPT Arts, and RYK Science College, Vidyanagar, College Road, Nashik.

Subject: Letter of appreciation ...

Dear Madam,

We take this opportunity to express sincere gratitude for delivering an informative lecture on the topic "**Millets for Women Health**" under the program 'Health and Nutrition' organized at Mula Education Society's Arts, Commerce and Science College, Sonai. Tal. Newasa, Dist. Ahmednagar.

We appreciate the thorough guidance extended by you during your presentation. Your speech escalated the program to the immeasurable height.

Once again thank you for your precious time and looking forward for your cooperation in future activities and events of MAESA foundation.

With best Regards



Director

MAESA Foundation, Pune





10 Elite, Kadam-Jagtap Associates, Common Building, A1-304, Pimple Gurav, Pune-411061Reg. No. 205481Contact: 9096132046email. mayesaenv@gmail.com

Ref. MF/ 046/2022-23

Date: 27/02/2023

To, Dr. Sanjay G. Auti, Professor and Head, Department of Botany, HPT Arts, and RYK Science College, Vidyanagar, College Road, Nashik.

Subject: Letter of appreciation ...

Dear Sir,

We take this opportunity to express sincere gratitude for delivering an informative lecture on floral diversity of plateaus and screening the documentary on **"Anjaneri-The Hidden Treasure**" for college students on 27 February 2023 at Mula Education Society's Arts, Commerce and Science College Sonai, Tal. Newasa, Dist. Ahmednagar.

We appreciate the thorough guidance extended by you during your presentation and followed by documentary film. All our student participants inspired from documentary film and understood the importance of live documentation of biodiversity.

Once again thank you for your precious time and looking forward for your cooperation in future activities and events of MAESA foundation.

With best Regards





Director MAESA Foundation, Pune



10 Elite, Kadam-Jagtap Associates, Common Building, A1-304, Pimple Gurav, Pune-411061Reg. No. 205481Contact: 9096132046email. mayesaenv@gmail.com

Ref. MF/ 28/2023-24

Date: 16/08/2023

To, Dr. Sanjay G. Auti Professor and Head Department of Botany HPT Arts, and RYK Science College, Vidyanagar, College Road, Nashik.

Subject: Letter of appreciation ...

Dear Sir,

We take this opportunity to express sincere gratitude for delivering an informative lecture entitled **"Cultivation, Conservation and Promotion of Millets**" for college students on the occasion of **International Year of Millet 2023**' on 16th August 2023 at Mula Education Society's Arts, Commerce and Science College Sonai, Tal. Newasa, Dist. Ahmednagar.

We appreciate the thorough guidance extended by you during your presentation and followed by documentary film. All our student participants inspired from documentary film and understood the importance of live documentation of biodiversity.

Once again thank you for your precious time and looking forward for your cooperation in future activities and events of MAESA foundation.

With best Regards



Director

MAESA Foundation, Pune





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Sr. no.	Name of the collaborating agency/ institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
			1	2021	Vicoa gokhalei (Inuleae, Asteraceae), a new species from the northern Western Ghats, India (Research collaboration)
	Derect Cl. Harborn	kshan Arts, nd e Mokhada, har	2	2022	<i>Eriocaulon shrirangii</i> (Eriocaulaceae), a new species from the lateritic plateaus of Konkan region of Maharashtra, India
1.	Sanstha's Arts, Science and		3	2023	Workshop on Millets: Cultivation, Conservation & Promotion (Research collaboration)
	Commerce College, Mokhada, Dist. Palghar		4	2023	Rediscovery of little-known- monotypic genus <i>Karnataka</i> P.K.Mukh. & Constance (Apiaceae) (Research collaboration)
			5	2023	NEW RECORDS OF GRASSES TO THE KARNATAKA STATE, INDIA (Research collaboration)
			6	2024	Tripogon salunkhei (Poaceae), a new grass species from Maharashtra state, India (Research collaboration)

List of the Activities conducted under MoU



YK (SC.) COLLEGE

MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

Department of Botany,

Rayat Shikshan Sanstha's Arts, Science and Commerce College, Mokhada, Dist. Palghar 401604 (Maharashtra)

di

Department of Botany,

Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College Nashik, Dist. Nashik- 422 005 (Maharashtra)

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FOR

FACULTY EXCHANGE PROGRAMME, SKILL DEVELOPMENT, STUDENT EXCHANGE PROGRAMME, RESEARCH AND DEVELOPMENT SERVICES AND RELATED SERVICES



Seanned by CamScanner



फक्त प्रतिज्ञापनासाठी (अनुच्छेद-४) प्रतिज्ञापन्न लाणाकडं नाटर करावधाव-माराजाच्य काणाव्य चाहर काराव्याच-प्रतिहावद्वारा रांच कारण प्रतिङाज्य करारनामा समरणपुर ??Epincipal Arts, Science & Com. College मद्राक चिड्डन प्रत्याच्याचे त्यव व शहरारों प्रस मा = किसन बार्टनजी नोट कॉर अन्. क्रम्सिक दिलाक 2.41.15 2001 3 0 NOV. 2021 ¶र ७. ं२० वण्यात्राची तहं परवार ८००० महावा विकल्कार स्टब्स् १३. क. पाटाल सह प्रत्वान अभगक "तरद मुटाक दिलाज डिकाण जन र क . '0:१५ 2 T & 4200009 प्रत्य पहांसल करेरी माखाडा ता. माखाड, जि. पातघर

ज्या कारणासाठेः ज्यानाः भुटाक खरदं। कलः त्यानी त्याव कारणासाठी मुदाक खरेवे कल्वाणमुन ६ मांहन्यार वापरण वधणकारक आहे.



MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter called as the 'MoU') is entered into on this the 1st Wednesday of December Two Thousand and Twenty One (01 / 12 / 2021), by and between, Department of Botany of Rayat Shikshan Saustha's Arts, Science and Commerce College, Mokhada, Dist. Palghar- 401604, the First Party represented herein by its Principal Dr. L. D. Bhor (hereinafter referred as 'First Party', the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors - in-office, administrators and assigns).

AND



Department of Botany of Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College Nashik, Dist. Nashik- 422 005, and represented herein by its Principal Dr. V. N. Suryawanshi (hereinafter referred as 'Second Party', the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors - inoffice, administrators and assigns)

WHEREAS:

First Party is a Higher Educational Institution named: A)

(i) Name of Institution: Arts, Science and Commerce College, Mokhada, Dist: Paighar.

- First Party & Second Party believe that collaboration and co-operation between B) themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.
- The Parties intent to cooperate and focus their efforts on cooperation within area of C Faculty Exchange Programme, Skill Development, Student Exchange Programme, R&D Services and Related Services.
- Both Parties, being legal entities in themselves desire to sign this MOU for advancing D)their mutual interests.
- Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College Nashik, Dist. E) Nashik- 422 605, the Second Party is engaged in Education fields.

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERE TO AGREE AS FOLLOWS:

CLAUSE I CO-OPERATION

1.1 Both Parties are united by common interests and objectives, and they shall establish channels of communication and co-operation that will promote and advance their respective operations within the Rayat Shikshan Sanstha's Arts, Science and Commerce College,





Mokhada, Dist. Palghar – 401604 and its related wings. The Parties shall keep each other informed of potential opportunities and shall share all information that may be relevant to secure additional opportunities for one another.

1.2 First Party and Second Party co-operation will facilitate effective utilization of the intellectual capabilities of the faculty of First Party providing significant inputs to them in developing suitable teaching / training systems, keeping in mind the needs of the laboratory, the Second Party.

1.3 The general terms of co-operation shall be governed by this MoU. The Parties shall cooperate with each other and shall, as promptly as is reasonably practical, enter into all relevant agreements, deeds and documents (the 'Definitive Documents') as may be required to give effect to the actions contemplated in terms of this MoU. The term of Definitive Documents shall be mutually decided between the Parties. Along with the Definitive Documents, this MoU shall represent the entire understanding as to the subject matter hereof, and shall supersede any prior understanding between the Parties on the subject matter hereof.

CLAUSE 2 SCOPE OF THE MoU

2.1 The budding graduates from the institutions could play a key role in technological upgradation, innovation and competitiveness of a laboratory. Both parties believe that close cooperation between the two would be of major benefit to the student community to enhance their skills and knowledge.

2.2 Curriculum Design: Second Party will give valuable inputs to the First Party in teaching / training methodology and suitably customize the curriculum so that the students fit into the laboratorial scenario meaningfully.

2.3 Laboratory Training & Visits: Laboratory and Institution interaction will give an insight in to the latest developments / requirements of the laboratories; the Second Party to permit the Faculty and Students of the First Party to visit its group companies and also involve in Training Programs for the First Party. The training and exposure provided to students and faculty through this association will build confidence and prepare the students to have a smooth transition from academic to working career. The Second Party will provide its Labs for the hands-on training of the learners enrolled with the First Party.

2.4 Research and Development: Both Parties have agreed to earry out the joint research activities in the fields of Botany.

2.5 Skill Development Programs: Second Party to train the students of First Party on the emerging technologies in order to bridge the skill gap and make them laboratory ready. **Students can volunteer** in blood donation camp activities and assist the blood bank staff.



14

2.6 Guest Lectures: Second Party to extend the necessary support to deliver guest lectures to the students of the First Party on the technology trends and in house requirements.

2.7 Faculty Development Programs: Second Party to train the Faculties of First Party for imparting training as per the laboratory requirement considering the National Occupational Standards in concerned sector, if available.

2.8 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required for offering the Programmes on the terms specified herein

There is no financial commitment on the part of the Rayat Shihshan Sanstha's Arts, Science and Commerce College, Mokhada, Dist. Palghar- 401604 the First Party to take up any programme mentioned in the MoU. If there is any financial consideration, it will be dealt separately.

CLAUSE 3

INTELLECTUAL PROPERTY

3.1 Nothing contained in this MoU shall, by express grant, implication, Estopped or otherwise, create in either Party any right, title, interest, or license in or to the intellectual property (including but not limited to know-how, inventions, patents, copy rights and ≥designs) of the other Party. 2. 1. 6

CLAUSE 4

VALIDITY

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4. All the second second will be valid until it is expressly terminated by either Party or mutually the agreed terms, during which period Department of Botany, Rayat Shikshan Sanstha's Arts, Science and Commerce College, Mokhada, Dist. Palghar- 401604, the First Party, as the case may be, will take effective steps for implementation of this MoU or Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College Nashik, Dist. Nashik- 422 005 the Second Party after termination of this Agreement by way of elimanumication, correspondence etc., shall not be construed as an extension of this MoU.

4.2 Both Parties may terminate this MoU upon 30 calendar day's notice in writing. In the event of termination, both parties have to discharge their obligations.

CLAUSE 5

RELATIONSHIP BETWEEN THE PARTIES

5.1 It is expressly agreed that Department of Botany, Rayat Shikshan Sanstha's Arts, Science and Commerce College, Moldhada and Goldhale Education Society's U.P.T. Arts and R.Y.K. Science College Nashilt, Dist. Nashilt- 422 005, are acting under this MoU as independent contractors, and the relationship established under this Moti shall not be construed as a partnership. Neither Party is authorized to use the other Party's name in any



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way, to make any representations or create any obligation or liability, expressed or implied, on behalf of the other Party, without the prior written consent of the other Party. Neither Party shall have, nor represent itself as having, any authority under the terms of this MoU to make agreements of any kind in the name of or binding upon the other Party, to pledge the other Party's credit, or to extend credit on behalf of the other Party.

First Party

Second Party.

6.7

Res Fish S& Auti

KUCLESAN

Any divergence or difference derived from the interpretation or application of the MoU shall be resolved by arbitration between the parties as per the Arbitration Act, 1996. The place of . the arbitration shall be at District Head Quarters of the First Party. This undertaking is to be construed in accordance with Indian Law with exclusive jurisdiction in the Courts of Palghar.

For.

Nashik- 422 005

0253-2572153

AGREED:

For

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and R.Y.K. Science College Nashik, Dist.

Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College Nashik, Dist. Nashik- 422 005

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Witness 1: (Dr A N. Churdone) Witness 3: Morshpande







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Vicoa gokhalei (Inuleae, Asteraceae), a new species from the northern Western Ghats, India

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Abstract

A new species of *Vicoa*, *V. gokhalei* is described and illustrated from high elevated areas of northern Western Ghats, India. The new species is closely related with *V. cernua* which is also known from high elevated areas of northern Western Ghats. Along with detailed description, diagnostic characters, phenology, coloured photographs, illustration, ecological note, distribution and identity of the new species and key of *Vicoa* species for India are provided.

Keywords: Compositae, endemism, eudicots, high elevation, Maharashtra, new taxon

Introduction

The genus *Vicoa* Cassini (1829: 418) (Inuleae, Asteraceae) comprises 14 species mainly distributed in Cape Verde, Tropical Africa, Arabian Peninsula to South China and Indo-China (POWO 2019). The genus *Vicoa* was subsumed into the genus *Pentanema* Cassini (1818: 74) (Mabberley 2017). Recently Gutierrez-Larruscain *et al.* (2018) transferred 20 species of different genera of the *Inula* Linnaeus (1753: 881) group into the genus *Pentanema* and resurrected the genus *Vicoa* based on molecular phylogeny with supported chromosome counts. The genus *Vicoa* is represented by three species and one variety in India (Hajra *et al.* 1995, Raju & Raju 1996). Among them, *V. cernua* Dalzell (1861: 126) is distributed in China, Bhutan, Nepal and India. It is reported in India from Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and Tamil Nadu states (Shetty & Singh 1987, Saxena & Brahman 1995, Nayar *et al.* 2014) and differentiated from other Indian species by the characters of basal leaves with distinct petiole, involucre bracts with recurved tips and pappus of the ray florets with one to two bristles.

During collection of members of the Maydeae (Poaceae) from northern Western Ghats of India, we have collected interesting specimens of the genus *Vicoa*. The collected specimens show similarities with *V. cernua* in the leaf characters but differ in conspicuous ray florets. After our critical analysis and consultation of relevant literature (Dalzell & Gibson 1861, Cooke 1908, Hajra *et al.* 1995) and study of the type of *V. cernua* (K001325280!), the collected specimens were found to be hereto undescribed species of *Vicoa*. The new species is described and illustrated here as a *Vicoa gokhalei*.

Taxonomic treatment

Vicoa gokhalei Gosavi, Madhav, Chandore & S.R.Yadav sp. nov. (Figs. 1, 2, 3 & 4)

Vicoa gokhalei is closely related to *V. cernua* Dalzell but differs in its 0.6 to 1.2 mm thick peduncle (vs. 0.1 to 0.2 mm thick peduncle), capitula 13 to 35 mm across (vs. capitula 6 to 7 mm across), outer involucral bracts linear-ovate (vs. outer involucral bracts linear-lanceolate), inner involucral bracts with fimbriate margin (vs. inner involucral bracts with entire margin), receptacle 6–8 mm across (vs. receptacle 3.0–3.5 mm across), ray florets 6–10 mm long (vs. ray florets 0.8–1.5 mm long) and narrowly obdeltoid-oblanceolate achenes of disc florets with 2–5 pappus hairs (vs. oblong to oblanceolate achenes of disc florets with 10–14 pappus hairs).



FIGURE 1. Vicoa gokhalei sp. nov. A. Habitat; B. Plants in open areas; C. Single plant; D. & E. Capitula. Photographs by K.V.C. Gosavi from K.V.C. Gosavi & N.A. Madhav 5101.



FIGURE 2. Comparative habit of A. Vicoa gokhalei sp. nov. and B. V. cernua. Photographs by N.A. Madhav.



FIGURE 3. Comparative account of *Vicoa gokhalei sp. nov.* and *V. cernua. Vicoa gokhalei sp. nov.* A. Branch with capitula; C. Top view of capitulum; E. L.S. of capitulum; G. Ray floret; I. Disc floret; K. Achene. *V. cernua* B. Branch with capitula; D. Top view of capitulum; F. L.S. of capitulum; H. Ray floret; J. Disc floret; L. Achene. Photographs by K.V.C. Gosavi from *K.V.C. Gosavi & N.A. Madhav 5101*.

Type:—INDIA. Maharashtra, Ahmednagar District, Harishchandragad, 19°23′50.23″N, 73°46′39.09″E, 1432 m, 07 December 2019, *K.V.C. Gosavi & N.A. Madhav* 5101 (holotype CAL!, isotypes BSI!, K!, SUK!).

Annual, erect, herbs, 30-170 cm high. Stems terete, branched, pubescent above, sparsely pubescent to glabrous at base. Leaves $1.5-12 \times 1.0-4.5$ cm, simple, alternate, dentate margin, acute apex, hispids-scabrous on both surfaces, lower surface pale, glandular; basal to middle leaves with 4-15 mm long petiole, lanceolate-elliptic, leaf base acute to acuminate; middle to apical leaves sessile, lanceolate-elliptic to oblong-oblanceolate, leaf base acute to broadly attenuate-amplexicaulis. Capitula in terminal cymes, heterogamous, yellow, $1.3-3.5 \times 0.5-0.7$ cm (including rays). Peduncles 1-4 cm long, densely pubescent-puberulous, with glandular hairs. Involucre bracts unequal; outer bracts

linear-ovate, 4–7 mm long, piloscent-sparsely glandular hairy on outer surface, margins sparsely scabrid, acuminate at apex, filiform from middle to above; inner bracts linear-elliptic to linear-lanceolate, 5–7 mm long, piloscent-glabrous, margins membranous, hyaline, fimbriate, single prominent mid nerve, green, apex acuminate. Receptacles convex, 6–8 mm across. Ray florets 25–40, pistilate, 8–14 mm long. Corolla tubes 2–3 mm long, glabrous to sparsely glandular hairy, faint yellow, 4-nerved; ray dorsally glandular hairy, oblong to narrowly elliptic-oblong, 6–10 mm long, 3-lobed; lobes spreading, equal, acute, glandular hairy. Pappus 2–4 hairs, persistent, uniseriate, silky, barballulate. Ovary 0.7–1.0 mm long, pubescent. Disc florets more than 150, perfect; corolla 3–4 mm long, tube with glandular hairs, yellow, 5-lobed, lobes spreading upto 1 mm diameter; lobes ovate, acute; pappus 2–5, persistence, uniseriate, 2.5–3.0 mm long, silky, barballulate. Stamens 5, anthers linear, 0.8 to 1.5 mm long, tail ca. 0.2 mm long. Stigmas bifid, lobes linear, sub-glabrous, ca. 0.5 mm long. Styles 2–3 mm long, slender, glabrous. Ovary 0.7–1.0 mm long, faint yellow, hairs on ribs. Achenes 1.0–1.2 mm long, narrowly obdeltoid-oblanceolate, ribs with long silky hairs.



FIGURE 4. Vicoa gokhalei. A. Habit; B. Outer involucre bract; C. Inner involucre bract; D. Ray floret; E. Disc floret; F. Stamen; G. Achene. Drawn from K.V.C. Gosavi & N.A. Madhav 5101 by N.A. Madhav.

Phenology:—Flowering and fruiting from November to January.

Local name:—Sonsari (Marathi).

Ecological Note:—*Vicoa gokhalei* is commonly growing from foothills to almost top (ranges from 822 m to 1219 m MSL) of Harishchandragad fort in different habitats like open areas of plateaus, slopes and forest edges. The species is commonly found in association with *Arundinella pumila*, *Capillipedium filiculme*, *Cynarospermum asperrimum*, *Dichanthium armatum*, *Lepidagathis cuspidata*, *Strobilanthes callosa* and *Tricholepis amplexicaulis*.

Distribution:—*Vicoa gokhalei* is found in ca. 20 km² around the type locality. Many botanists reported *V. gokhalei* as *V. cernua* from high elevated areas of northern Western Ghats. This was due to misidentification of the species. There are two sheets (K000974581 and K000974583) housed in K and labelled *Vicoa cernua*, collected from Bombay and Belgaum (India) respectively, which show ray florets similar to *V. gokhalei*. Thus, there is a need to explore the species distribution further, and also to evaluate its IUCN status. At present it is considered Data Deficient (DD, IUCN, 2012).

Etymology:—The specific epithet "*gokhalei*" honours "Gokhale Education Society, Nashik", one of the oldest and well known educational institutes of Maharashtra.

Additional specimens examined (paratypes):—INDIA. Maharashtra, Ahmednagar District, Ratanwadi, 22 January 2020, *K.V.C. Gosavi* 130 (SUK!); Bombay, *s.d., Lambert s.n.* (K000974581!), Karnataka, Belgam [Belgaum], November 1846, *J.E. Stocks & J.S. Law* 403 (K000974583!).

Key to the Indian species of Vicoa

1a.	Plant softly wooly	V. divaricata
1b.	Plant not as above	2
2a.	All leaves sessile; involucre bracts erect; ray florets epappose	V. indica
2b.	Basal leaves petiolate; involucre bracts recurved; ray florets pappose	3
3a.	Achenes of disc florets with 10-14 pappus hairs; rays 0.8-1.5 mm long	V. cernua
3b.	Achenes of disc florets with 2–5 pappus hairs; rays 6–10 mm long	V. gokhalei

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Eriocaulon shrirangii (Eriocaulaceae), a new species from the lateritic plateaus of Konkan region of Maharashtra, India

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Abstract

A new species *Eriocaulon shrirangii* is described and illustrated here from Konkan region of Maharashtra, India. The new species is allied to *E. belgaumensis* with rosulate and linear leaves, length of peduncles, *c*. 2 mm across heads and cells of seed coat transversely elongated, aligned in vertical rows, but differs in its oblanceolate floral bracts; pedicellate male flowers; linear-lanceolate sepals of female flower, hairy at apex; hoary petals of female flower and appendages present on seeds.

Keywords: Eriocaulon, sp. nov., endemism, monocots, pipewort, south Konkan, taxonomy

Introduction

The genus *Eriocaulon* Linnaeus (1753: 87) belongs to the family Eriocaulaceae, represented by *c*. 479 species and distributed from New World, Europe, Tropical & Subtropical Old World to Russian Far East, America (POWO 2022). In India, the genus *Eriocaulon* was studied by several workers viz., Fyson 1919, 1921, 1922, Ansari & Balakrishnan 2009, Darshetkar *et al.* 2021, etc. About 85 species are reported from India (Ansari & Balakrishnan 2009). Total 30 new species have been described from India in last 13 years by different workers (Yadav *et al.* 2008, Shimpale *et al.* 2010, Nimpy *et al.* 2011, Swapna *et al.* 2012, Biju *et al.* 2012, 2017, Sunil *et al.* 2013, Rashmi & Krishnakumar 2014, Sunil *et al.* 2014, Sunil & Naveen Kumar 2015, Manudev *et al.* 2017, Darshetkar *et al.* 2017, Anto *et al.* 2017, Paithane *et al.* 2017, Sunil *et al.* 2017, Naveen Kumar *et al.* 2017, Darshetkar *et al.* 2019, Khanna & Kumar 2019, Francis *et al.* 2020, Anoop & Robi 2021, Nampy & Akhil 2021, Kolte *et al.* 2022, Harishma *et al.* 2022), bringing the number of recognized species of *Eriocaulon* in India to 115 and most of species are described from lateritic plateaus.

The genus *Eriocaulon* is characterised by scapigerous, monoecious herbs; stems are usually very short or absent; peduncles solitary, few to many enclosed at base in a sheath; flowers in involucral heads, minutes, trimerous or rarely dimerous; seeds minute, translucent, cells of seed coat isodiametric or elongated transversely or vertically; the radial walls with or without appendages. Appendages of seeds setiform, rectangular, ribbon-like or rarely represented by ridges on the surface of seeds. In India, the genus *Eriocaulon* is found in various habitat like in the streams, along the margin of ponds, grows in open marshy places, in the paddy fields, wet grasslands and on the lateritic plateaus.

During our floristic exploration on low elevated lateritic plateaus of the Ratnagiri district of Maharashtra, we collected some interesting specimens of *Eriocaulon* from lateritic plateaus of Chauke, Dongar, Karshingewadi, Sakhar and Vikhare-Gothane in Rajapur tehsil. After critical analysis of the morphological features of the plants, SEM study of

seeds and examination of relevant literature (Ansari & Balakrishnan 2009, Darshetkar *et al.* 2021, Fyson 1919–1922, Hooker 1893, Moldenke 1980, Nair 1987, Shimpale & Yadav 2010), we concluded that the specimens represent an undescribed species of *Eriocaulon*. After critical analysis of specimens and consultation of various herbaria (BSI, CAL, SUK and Online herbaria: K) it was determined that the species is closely allied to *Eriocaulon belgaumensis* Shimpale & S.R.Yadav (2010: 337). Therefore, it is described here as a new species, *Eriocaulon shrirangii* Chandore, Borude, Bhalekar, Madhav & Gosavi and comparative SEM photos of seeds of both species are provided in the Fig. 3. The color photoplates and illustration of new species is provided in the paper (Figs. 1 & 2).

Taxonomic treatment

Eriocaulon shrirangii Chandore, Borude, Bhalekar, Madhav & Gosavi, sp. nov. (Figs. 1, 2 & 3).

- Type:—INDIA. Maharashtra: Ratnagiri District, Rajapur tehsil, Karshingewadi Village 16°34'31.9"N, 73°31'40.5"E, 14 September 2018, *A.N. Chandore 1582* (holotype CAL!; isotypes BSI!, K!, SUK!)
- **Diagnosis:**—*Eriocaulon shrirangii* is closely allied to *E. belgaumensis* with rosulate and linear leaves, length of peduncles, *c*. 2 mm across heads and cells of seed coat transversely elongated, aligned in vertical rows, but differ having in floral bracts oblanceolate, lobed at apex; $0.85-0.95 \times 0.25-0.35$ mm (vs. truncate, cuneate, obtuse at apex; *c*. 0.7×0.5 mm), male flower-pedicellate (vs. sessile), female flower-sepals linear-lanceolate (vs. narrowly ovate), female flower-petals hoary at middle and apex (vs. sparsely barbate at apex), seeds oblong-ellipsoid, obtuse at apex, appendages present; appendages 3–5 from the transverse radial wall (vs. ellipsoid, acute at apex, appendages absent).
- Annual, acaulescent herbs, 1.0–1.8 cm high. Roots fibrous, white, 7–12 mm long. Leaves 4.0–9.0 × 0.5–1.0 mm long, rosulate, linear, apex acuminate, glabrous. Peduncles 4 to 6, 1.0–1.7 cm long, straight, slender, rigid, glabrous, swollen at apex. Sheaths 0.4–0.8 cm long, glabrous; limb ovate, acute at apex, entire, papery along margin. Heads 1.8–2.2 mm across, hemispherical or cuneate, straw coloured or white. Receptacle convex, glabrous. Involucral bracts 0.9–1.1 × 0.7–0.8 mm, erect, oblong-obovate, obtuse, lobed at apex, chartaceous, glabrous, dull black. Floral bracts 0.85–0.95 × 0.25–0.35 mm, oblanceolate, hyaline, lobed at apex, hoary at upper part of the outer face, dull black. Male flowers 0.7–1.0 mm long, pedicellate; pedicel *c*. 0.15 mm long; sepals cuneate, connate into a spathe, 3 lobed; lobes truncate, hoary at apex, black; stipe of corolla 0.5–0.6 mm long; petals 3, minute, subequal, obovate, obtuse and sparsely hairy at apex, black glands present; anthers 6, black. Female flowers 1.0–1.2 mm long, sessile; sepals 3, free, subequal, 0.5–0.7 mm × 0.10–0.15 mm, linear-lanceolate, obtuse at apex, with hairs at apex, black; petals 3, black gland present, unequal, one large, 1.0–1.2 mm long, oblanceolate or spatulate, obtuse at apex, hoary at middle and apex; other two petals 0.6–0.8 mm long, narrowly oblanceolate, obtuse at apex, hoary at middle; ovary sessile, 0.12–0.22 mm long, ovoid; style trifid. Seed 0.33–0.40 × 0.13–0.20 mm, oblong-ellipsoid, obtuse at apex, pale yellow; cells of seed coat transversely elongated, aligned in vertical rows, appendages 3–5 from the transverse radial wall, setiform, minutely dilated at apex.

Habitat:—*Eriocaulon shrirangii* grows on lateritic plateaus in association with *Eriocaulon eurypeplon* Korn. (1856: 685), *E. konkanense* Punekar, Malpure & Lakshmin. (2004: 630), *E. parvicephalum* Darsh., R.K.Choudhary, Datar & Tamhankar (2017: 235), *Dimeria gracilis* Nees ex Steud. (1854: 413), *D. woodrowii* Stapf (1895: 2312), *Trithuria konkanensis* S.R.Yadav & Janarth. (1994: 18), *Drosera indica* L. (1753: 282) and *Neanotis subtilis* (Miq.) Govaerts ex Punekar & Lakshmin. (2011: 255).

Phenology:—Flowering and fruiting from July to September.

Distribution:—The new species is found on lateritic plateaus along the margin of seasonal ponds at Chauke, Dongar, Karshingewadi, Sakhar and Vikhare-Gothane in Rajapur tehsil of Ratnagiri district of Maharashtra State.

Etymology:—The specific epithet is in honours of Emeritus Scientist Prof. (Dr.) Shrirang Ramchandra Yadav working at Department of Botany, Shivaji University, Kolhapur for his incredible contribution in the field of angiosperm taxonomy and biodiversity conservation.

Note:—Scanning Electron Microscope (SEM) studies of seeds of both species of *Eriocaulon* shows that, 3–5 setiform appendages are present from the transverse radial wall of seeds *Eriocaulon shrirangii sp. nov.*; while the appendages are absent in *E. belgaumensis*.

Additional specimens examined (Paratypes):—INDIA, Maharashtra, Ratnagiri District, Rajapur, Chauke, 30 August 2022, *D.B. Borude 855* (SUK!); Ratnagiri District, Rajapur, Vikhare-Gothane, 12 September 2022, *A.N. Chandore 2679* (SUK!); *D.B. Borude 857* (SUK!); Ratnagiri District, Rajapur, Dongar, 14 September 2022, *A.N. Chandore 2686* (SUK!); *D.B. Borude 864* (SUK!).



FIGURE 1. *Eriocaulon shrirangii* Chandore, Borude, Bhalekar, Madhav & Gosavi, *sp. nov.*, A. Habitat; B. Habit; C. Involucral Bract; D. Floral Bract; E. Male Flower; F. Female Flower; G. Seeds (Scale 1 bar = 1 mm for B & 0.1 mm for C–G). Photographs from *A.N. Chandore 1582*.



FIGURE 2. Illustration of *Eriocaulon shrirangii* Chandore, Borude, Bhalekar, Madhav & Gosavi, *sp. nov.*, (*A.N. Chandore 1582*) A. Habit; B. Involucral Bract; C. Floral Bract; D. Male Flower; E. Female Flower; F. Seed. Illustration drawn by N.A. Madhav.



FIGURE 3. Comparison between seeds SEM photos: A. & C. *Eriocaulon shrirangii* Chandore, Borude, Bhalekar, Madhav & Gosavi, *sp. nov.* (Photographs from *A.N. Chandore 1582*) and B. & D. *Eriocaulon belgaumensis* Shimpale & S.R.Yadav (Photographs from *A.N. Chandore 954*).

TABLE 1. Morphological comparison between h	Eriocaulon shrirangii Chandore,	Borude,	Bhalekar,	Madhav	& Gosavi, s	р.
nov. and E. belgaumensis Shimpale & S.R. Yadav	<i>.</i>					

Characters	Eriocaulon shrirangii sp. nov.	Eriocaulon belgaumensis
Floral bracts	oblanceolate; 0.85–0.95 \times 0.25–0.35 mm	truncate; c. 0.7×0.5 mm
Male flowers- Pedicels	present, c. 0.15 mm long	minute or absent
Female flower- Sepals	linear-lanceolate, 0.5–0.7 mm \times 0.1–0.15 mm, hairs at apex	narrowly ovate, 1.0–2.0 mm \times 0.2–0.3 mm, glabrous or with few hairs at apex
Female flower-Petals	hoary at middle and apex	sparsely barbate at apex
Seeds	oblong-ellipsoid, obtuse at apex, appendages present; appendages 3–5 from the transverse radial wall, setiform, minutely dilated at apex	ellipsoid, acute at apex, appendages absent

Acknowledgements

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Rayat Shikshan Sanstha's, Arts, Science and Commerce College, Mokhada Mokhada Dist. Palghar (Maharashtra) (Affiliated to University of Mumbai, Mumbai)



Department of Botany and IQAC jointly organized One Day Workshop on Millets: Cultivation, Conservation, and Promotion (Friday, 10th March 2023)

The one-day workshop on "Millets: Cultivation, Conservation and promotion" was a collaborative effort between the Arts, Commerce and Science College, Mokhada, Dist, Palghar, Centre of Millet Research and Training at Savitribai Phule University, the Department of Botany at HPT Arts and RYK Science College, Nashik. The event aimed to promote awareness about millets and their nutritional benefits, with a special focus on educating girls, particularly those studying Home Science. Dr. Sanjay Auti and Dr. Arun Chandore worked as a coordinator of the workshop.

Workshop Focus: The primary objective of the workshop is to educate participants, particularly girls, about the nutritional value and health advantages of millets. Prior to the training, participants were introduced to different types of millets and their unique qualities. This knowledge likely helped them appreciate the importance of millets in a broader context.

Students had the opportunity to learn various aspects of millets such as conservation of the landraces, their significance and importance in the present scenario.

The workshop saw active participation from teachers and a significant number of girls, indicating the keen interest and engagement of the attendees.

The training and information provided during the workshop hold particular significance for students residing in the tribal region. It equips them with the skills and knowledge necessary for enhancing productivity and production of different millets and understanding the importance of millets for sustainable agricultural development. Overall, this collaborative workshop appears to be a valuable initiative for promoting millet cultivation, conservation, while also fostering awareness about the nutritional benefits of millets among the participants.



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Department of Botany and IQAC jointly organized One Day Workshop on Millets: Cultivation, Conservation, & Promotion *** Programme Schedule ***

(Friday, 10th March 2023) Time 9:00 am onwards

Inauguration and Felicitation:

Introduction of Programme:

Prof. S. E. Saindanshiv

Introduction of Chief Guest:

Dr. A. N. Chandore

Prof. (Dr.) S. G. Auti

Prin. (Dr.) L. D. Bhor

Invited Talk:

Presidential Speech:

Vote of Thanks:

Dr. B. R. Ughade

Anchor:

Place:

Prof. S. Y. Tayade

New Building 1st Floor



HEAD Department of Botany, Arts. Science & Com. College Mokhada, Dist. Palehar

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Rayat Shikshan Sanstha's, Arts, Science and Commerce College, Mokhada Mokhada Dist. Palghar (Maharashtra) (Affiliated to University of Mumbai, Mumbai)



Department of Botany and IQAC jointly organized One Day Workshop on

Millets of Mokhada & Surrounding Area (Friday, 10th March 2023)

Students Attendance

Sr. No.	Name of Students	Signature
1.	Jadhov Damini Ravindra	Bernini
2.	Janathe Asha Vikas	Fronth
3.	Icodu Jayesh vishnu	Um.
4.	kamdi Ravindra uinayak	Parcha
5.	Deveam Bhau Khandavi	funty-
6.	Ashwin Dinesh Kyrkate	Gurrine
7.	mali Akshay salvanji	Specie
8.	Mali Atul Jaganwith	June 1
9.	Miscul Vishal Keustma	Romisca
10.	Pauxar yogita Ramesh	Ruler
11.	Sabale pooja Rajaram	Bath
12.	sathle Reshma yuras	Baute
13.	vaje prugasi pushinash	- time
14.	vaje Suvarna Devram	Claye
15.	Wayofe Norendre Prakagh	Seube
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18.	Badade Priya Mohan	Reporter





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https://doi.org/10.11646/phytotaxa.601.1.8

Rediscovery of little-known-monotypic genus *Karnataka* P.K.Mukh. & Constance (Apiaceae)

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Abstract

Karnataka (Apiaceae) is a monotypic genus rediscovered after it's type collection around 175 years from Mudbidri area of Dakshina Kannada (South Canara) district, Karnataka. Detailed morphological description, identity notes and photoplates have been provided based on fresh material collected by authors.

Keywords: Endemic genera, eudicots, identity, Karnataka benthamii, monotypic, Umbelliferae, Western Ghats.

Introduction

Family Apiaceae is represented by about 466 genera and 3820 species throughout globe and majority of Apiaceae are distributed and diversified at North America and temperate Eurasia (Plunkett *et al.*, 2018). According to present estimation, the family is represented by 70 genera and 246 species in India (Gosavi *et al.*, 2020, 2022) including six endemic genera to the country. All these six genera namely *Karnataka* P.K.Mukh. & Constance (1986a: 145), *Pinda* P.K.Mukh. & Constance (1986b: 226), *Polyzygus* Dalzell (1986b: 228), *Sivadasania* N.Mohanan & Pimenov (2007: 900), *Shrirangia* Gosavi, Madhav & Chandore (2022: 2) and *Vanasushava* P.K.Mukh. & Constance (1974: 595) are restricted to the Western Ghats. Genus *Karnataka* can be easily catches in the field by the major characters: tuberous habit, large ternate-compound leaf, white-brilliant flowers, dorsally sub-compressed to compressed fruit, three ribbed fruit and unwinged lateral ribs.

During survey of flowering plants from Western Ghats, authors were came across an unknown tuberous Apiaceae member from Mudbidri, Dakshina Kannada district. After examination of relevant literature (Clarke, 1879; Cooke, 1903; Mukherjee and Constance, 1986a,1986b, 1993) the collected unknown Apiaceae member was identified as monotypic genus *Karnataka*. The species identity *Karnataka benthamii* (C.B.Clarke) P.K.Mukh. & Constance has been confirmed after consultation of holotype (BM000630552) housed in BM.

Metz collected plant specimens from South Kanara (Canara) and labelled by Miquel through the intermediate R. F. Hohenaker in around 1847 (Burkill, 1965). Among the plants collection Metz had been collected Apiaceae member which was labelled as *Pimpinella? involucrata* Wight et Arn. (1834: 369). Clarke examined those sheets and realized that the plant material altogether different than *P. involucrata* especially by fruit morphology. Thus, he kept the species under the genus *Schultzia* Spreng. (1813: 30) with a new species, *Schultzia benthamii* C.B.Clarke (1879: 697). However, he had doubt on species as the fruit characters did not fit with the genus *Schultzia* (Clarke, 1879). After examination of same sheets, Mukherjee & Constance (1986a) were established new genus *i.e. Karnataka* based on carpological and floral characters as well as tuberous habit. Since 1847 nobody had collected this genus. Thus, the present collection of genus *Karnataka* is the rediscovery after 175 years.

Taxonomic Treatment

Karnataka P.K.Mukh. & Constance, Brittonia 38: 145. 1986.

Perennial tuberous herbs. Rootstock tuberous. Stem slender, ribbed. Leaves ternate to bi-pinnately ternate with dilated sheathing leaf base; basal-middle leaves long petiolate; upper leaves sessile with prominent lamina and sheath; leaflet lobe base attenuate, lateral leaf lobe base unequal. Inflorescence terminal and axillary compound umbel. Involucre bracts absent or present, if present then oval-ovate to oblong. Involucel usually ovate, apex acute to acuminate, rarely trifid, 1-nerved. Rays sub-equal to unequal, ribbed. Bracteoles unequal, linear-ovate to lanceolate, apex obtuse-acute or trifid. Flowers pedicellate; pedicel equal-subequal. Flowers perfect, heteromorphic, some central flowers staminate. Calyx teeth 5, subequal, subulate, persistent. Petals brilliant white, regular, inflexed, acute at apex. Style persistent. Stylopodium discoid, massive, persistent. Fruit dorsally sub-compressed to compressed; mericarp dorsally flattened; ribs primary, prominent, vascular bundles prominent. Lateral ribs prominent, inflexed, unwinged. Commissural vittae 6–7; vallecular vittae unequal, 2–3 between two vallecular ribs, 3–4 between lateral and vallecular ribs. Endosperm grooved under vittae.



FIGURE 1. Photographs of *Karnataka benthamii* (C.B.Clarke) P.K.Mukh. & Constance in field, A. Habitat, B. Inflorescence, C. Fruiting twig. Photos by: K.V.C. Gosavi (A), A.N. Chandore (B, C).



FIGURE 2. Detailed photographs of *Karnataka benthamii* (C.B.Clarke) P.K.Mukh. & Constance, A. Habit, B. Tuber, C. Basal leaf, D. & E. Involucre bract, F. Involucel, G. Top view of umbel, H. Top view of umbellet, I. Side view of umbellet showing bractioles, J. Single flower, K. Stamens, L. Carpel, M. Fruits, N. Dehisced fruit showing two mericarps. Photos by: N.A. Madhav (A, B, C) and K.V.C. Gosavi (D, E, F, G, H, I, J, K, L, M, N).



FIGURE 3. Mericarp and mericarp anatomy of *Karnataka benthamii* (C.B.Clarke) P.K.Mukh. & Constance, A. & C. Dorsal side of mericarp, B. & D. Ventral side of mericarp, E. T.S. of mericarp, F. Part of T.S. of mericarp, G. Part of mericarp showing vascular bundle in rib. Photos by: K.V.C. Gosavi. (cav = Cavitas, cv = Commissural vittae, fvb = Funicular vascular bundle, lr = Lateral ribs, r = Primary ribs, r = Ribs, vb = Vascular bundle, vv = Vallecular vittae).

Karnataka benthamii (C.B.Clarke) P.K.Mukh. & Constance, Brittonia 38: 145, f. 1. 1986. *Schultzia benthamii* C.B.Clarke in Hook.f., Fl. Brit. India 2: 697. 1879. *Pimpinella benthamii* (C.B.Clarke) M.R.Almeida, Fl. Maharashtra 2: 358. 1998.

Perennial tuberous herbs, 0.4 to 1.0 m tall, erect with weak branches. Rootstock tuberous; tubers spherical-ovoid or elongated, usually unbranched with tapering base. Stem slender, erect, 8.0-40 cm tall, 3.0-7.0 mm in width, glabrous to sparsely papillose, ribbed, internodes up to 20 cm. Leaves ternate to bi-pinnately ternate, $8.0-20 \times 10-14$ cm (excluding petiole); dilated sheathing leaf base; sheath membranous, narrowly hyaline, five to many-nerved, margin hyaline, glabrous; basal-middle leaves long petiolate; petiole $5.0-50 \times 0.2-0.5$ cm, slender, terete, glabrous, obscurely channeled; upper leaves sessile with prominent lamina and sheath; leaflets pinnate, $5.0-12 \times 2.0-7.0$ cm, petiolulate; petiolule 0.5-6.0 cm long, glabrous, channeled; leaflet lobes with or without distinct stalk; lobes tri-fid to pinnatifid, middle lobe longer then lateral, subulate to ovate-lanceolate, margin dentate, scaberulous, apex acute to mucronulate, leaflet lobe base attenuate, lateral leaf lobe base unequal, both leaf surfaces sparsely hairy. Inflorescence terminal and axillary compound umbel; peduncle 1.0-10 cm long, slender, sparsely papillose. Involucre bracts 0-2, oval-ovate to oblong, $0.3-2.0 \times 0.1-0.3$ cm, 3-5-nerved, margin membranous to hyaline, fimbriate, trilobed at apex or foliaceous. Involucel usually 0-3, $2.0-4.0 \times 1.0-1.5$ mm, usually ovate, apex acute to acuminate, rarely trifid, 1-nerved, sparsely papillose at base, margin scabrous to serrulate-hirsute, persistent. Rays 3-10, sub-equal to unequal, 1-2 cm long, ribbed, ribs with densely to sparsely papillose; 2-3 cm long in fruiting stage, stout. Bracteoles usually 3-4, 1-2 reduced, unequal, 2–3 mm long, linear-ovate to lanceolate, glabrous to sparsely papillose, 1–3-nerved, margin sparsely scabrous, apex obtuse-acute or trifid. Umbellet 6-16 flowered. Flowers pedicellate; pedicel equal-subequal, 2.0-4.0 mm long, papillate hairy. Flowers perfect, heteromorphic, some central flowers staminate. Calyx teeth 5, subequal, 0.3-0.5 mm long, subulate, persistent, acute at apex. Petals 5, 1.2–1.5 mm long, brilliant white, regular, inflexed, acute at apex. Stamens 5, filament glabrous, 1–2 mm long; anthers c. 0.5 mm long, included, purple coloured before anthesis. Style 2, 0.5-1.0 mm long, persistent. Stylopodium discoid, massive, persistent. Carpophore bi-partite. Fruit oval-elliptic to oblong, glabrescent to glabrous, dorsally sub-compressed to compressed, $5-10 \times 3.0-4.5$ mm, obtuse at apex, obtuse to rounded at base; mericarp dorsally flattened; ribs primary, three, prominent, vascular bundles prominent. Lateral ribs prominent, inflexed unwinged. Commissural vittae 6-7; vallecular vittae unequal, 2-3 between two vallecular ribs, 3-4 between lateral and vallecular ribs. Endosperm grooved under vittae.

Phenology:—Flowering: July to August; fruiting: August to September.

Specimens examined:—INDIA, Karnataka, Dakshina Kannada Dist., Mudbidri tehsil, Padyottu, 06/07/2021, *N.A. Madhav* and *V.B. Khandige NAM-506* (BSI!); Kallamundkar, Dailabettu, 22/08/2022, *K.V.C. Gosavi et al. KVCG-5097* (SUK!, CAL!); 22/08/2022, Koppala, *K.V.C. Gosavi et al. KVCG-5098* (SUK!, CAL!).

Ecological Note:-The species is growing along field bunds under tree shade and open grassland.

Distribution and conservation:—The species has been collected from five different localities of Mudbidri tehsil around 30 km areas. Authors observed that, the population of *Karnataka* has less than 50 individuals in each locality and since all localities are along the road sides and cultivated fields. Thus, anthropological pressure is very high on all located populations. We also observed that one population is going to vanish as whole area of population now under construction land. Therefore, need immediate action for the conservation of this species.

Karnataka confused with other genera:—Almeida (1998) mentioned genus *Karnataka* with new combination (*Pimpinella benthamii* (C.B.Clarke) M.R.Almeida (1998: 358) in his "Flora of Maharashtra" without any citation of specimen and locality. The mentioned carpological characters also do not match with *Karnataka benthamii*. Thus, he might have confused with vegetative characters of tuberous Apiaceae. Gosavi *et al.* (2016) worked on cytology of the endemic genera of Apiaceae from Central and Northern Western Ghats and in their work actually mentioned genus *Karnataka* is correctly matches with genus *Polyzygus* and mentioned genus *Polyzygus* is correctly matches with recently published genus *Shrirangia*. Thus, actual somatic chromosome number of *Polyzygus* and *Shrirangia* are 2n = 22 and 2n = 36 respectively. Chromosome number of the genus *Karnataka* is still unknown.

Taxonomic notes:—Vegetative characters and flower morphology are very confusable in the family Apiaceae. Genera *Karnataka*, *Polyzygus* and *Shrirangia* shares similar tuberous habit, leaf size, shape in some range and brilliant white flowers, but very distinct by the carpological characters. Genus *Karnataka* can be distinguished from the abovementioned genera by combination of carpological characters such as dorsally sub-compressed to compressed fruits, 3-ribs, only primary ribs present; lateral ribs prominent, inflexed, unwinged; commissural vittae 6–7; vallecular vittae unequal, 2–3 between two vallecular ribs, 3–4 between lateral and vallecular ribs.

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NEW RECORDS OF GRASSES TO THE KARNATAKA STATE, INDIA¹

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Introduction

During a floristic survey of Belgaum district of Karnataka, we collected 215 species and 9 varieties belonging to 88 genera of grasses, of which seven species, namely *Chrysopogon polyphyllus* (Hack. ex Hook.f.) Blatt. & McCann, *Dimeria blatteri* Bor, *Isachne swaminathanii* V. Prakash & S.K. Jain, *Ischaemum santapaui* Bor, *I. travancorense* Stapf ex C.E.C. Fisch., *Jansenella neglecta* S.R. Yadav, Chivalkar & Gosavi, and *Themeda pseudotremula* Potdar, Salunkhe & S.R. Yadav were not recorded for the region.

Of these seven species, so far three species i.e., *Dimeria* blatteri, Isachne swaminathanii and Themeda pseudotremula have been reported endemic to Maharashtra state (Mishra and Singh 2001; Potdar et al. 2012; Sankara Rao et al. 2019). Ischaemum santapaui, an endemic to India, was recorded from Gujarat, Maharashtra, and Nagar-Haveli (Singh and Rao 2008). Ischaemum travancorense was known only from Goa, Kerala and Maharashtra (Datar et al, 2014) while Jansenella neglecta was described from Maharashtra and also reported from Tamil Nadu (Ramachandran et al. 2015). Chrysopogon polyphyllus (Hack. ex Hook.f.) Blatt. & McCann was reported from Andhra Pradesh and Maharashtra (Sankara Rao et al. 2019) and also reported from Myanmar (Kress et al. 2003).

A survey of literature (Bor 1960; Kabeer and Nair 2009; Karthikeyan *et al.* 1989; Lakshminarasimhan 1996; Sankara Rao *et al.* 2019; Sharma *et al.* 1984) revealed that these seven grass species are not reported from Karnataka state; therefore, the species reported here from Belgaum district are new records for Karnataka state. The voucher specimens are deposited at the herbarium of the Botany Department, Shivaji University, Kolhapur (SUK), Maharashtra (India).

1. Chrysopogon polyphyllus (Hack. ex Hook.f.) Blatt. & McCann, J. Bombay Nat. Hist. Soc. 32: 416. 1928 and Bombay Grass. 72. 1935; Bor, Grasses of Burma, Ceylon, India & Pakistan 118. 1960; Karthik. *et al.*, Fl. Ind. Enum. Monocot. 198. 1989; Potdar *et al.*, Grasses of Maharashtra 69-70. 2012. Andropogon polyphyllus Hack. ex Hook.f., Fl. Brit. India 7: 194. 1896.

Illustration: Blatt. & McCann, *op. cit.*; Potdar *et al.*, *op. cit.* 71, f. 20.

Flowering & Fruiting: September–December.

Exsiccata: ANC-736.

Localities: Gokak (16° 11′ 25.4″ N, 74° 46′ 33.6″ E), Pachapur (Belgaum District).

Habitat: Grows along the streams on the rocky areas and also found among bushes.

Note: This species can be easily identified by its dense, many-flowered panicle.

Distribution: INDIA: Andhra Pradesh & Maharashtra; EXTRALIMITAL: Myanmar.

2. *Dimeria blatteri* Bor, Kew Bull. 4: 70. 1949 and Grasses of Burma, Ceylon, India & Pakistan 140. 1960; Potdar *et al.*, Grasses of Maharashtra 115. 2012.

Illustration: Bor, *op. cit.* 143, f. 4 (18); Potdar *et al.*, *op. cit.* 116, f. 40.

Flowering & Fruiting: October–November.

Exsiccata: ANC-80.

Locality: Chugul (15° 44′ 23.5″ N, 74° 12′ 50.2″ E) (Belgaum District).

Habitat: Occasionally grows on open grasslands.

Note: This species can be distinguished by its larger spikelets and few spikelets on raceme.

Distribution: INDIA: Maharashtra.

3. *Isachne swaminathanii* V. Prakash & S.K. Jain, Proc. Indian Acad. Sci. (Pl. Sci.) 92: 19, f. 10. 1983 and in Fasc. Fl. Ind. 14: 36. 1984; Potdar *et al.*, Grasses of Maharashtra 595. 2012.

Illustration: V. Prakash & S.K. Jain, op. cit.; Potdar et al., op. cit. 593, f. 283.

Flowering & Fruiting: September–October.

Exsiccata: ANC-81.

Locality: Chugul (15° 44′ 15.4″ N, 74° 12′ 53.7″ E) (Belgaum District).

Habitat: Rare, grows in damp places, in stream beds, shady places and ghat regions.



Note: This species is similar to *Isachne bicolor* Naik & Patunkar but differs by longer culms and panicles and lanceolate leaves.

Distribution: INDIA: Maharashtra.

4. *Ischaemum santapaui* Bor, J. Bombay Nat. Hist. Soc. 49: 167. 1950 and Grasses of Burma, Ceylon, India & Pakistan 185. 1960; Potdar *et al.*, Grasses of Maharashtra 199. 2012.

Illustration: Potdar et al., op. cit. 200, f. 81.

Flowering & Fruiting: September–November.

Exsiccata: ANC-956.

Locality: Sada (15° 40' 51.7" N, 74° 08' 12.4" E), Khanapur (Belgaum District).

Habitat: Rare, grows in rice fields and at marshy places on plateaus.

Note: This species can be distinguished from other species of *Ischaemum* by its stilt rooted culms and elliptic sessile spikelet.

Distribution: INDIA: Maharashtra.

5. *Ischaemum travancorense* Stapf ex C.E.C. Fisch. in Bull. Misc. Inform. Kew 1933: 353. 1933; Bor, Grasses of Burma, Ceylon, India & Pakistan 186. 1960; Potdar *et al.*, Grasses of Maharashtra 203. 2012.

Illustration: Lakshmin. in B.D.Sharma *et al.* (eds.), Fl. Maharashtra, Monocot. 531. 1996; Potdar *et al.*, *op. cit.* 207, f. 85.

Flowering & Fruiting: October–November.

Exsiccata: ANC-1334.

Localities: Kankumbi, Sada ($15^{\circ} 40' 01.5''$ N, $74^{\circ} 07'$ 17.2" E) (Belgaum District).

Habitat: Occasionally grows in water logged areas along the road sides and rocky plateaus.

Note: This species is similar to *Ischaemum mangaluricum* (Hack.) Stapf ex C.E.C. Fisch., but it can be distinguished by narrowly winged lower glume of sessile spikelet.

Distribution: INDIA: Goa, Kerala, and Maharashtra.

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6. *Jansenella neglecta* S.R. Yadav, Chivalkar & Gosavi, Rheedea 20: 39. 2010; Potdar *et al.*, Grasses of Maharashtra 464. 2012.

Illustration: S.R. Yadav *et al.*, *op. cit.* 40, f. 1. Flowering & Fruiting: August–November.

Exsiccata: ANC-900.

Localities: Amgaon (15° 37′ 57.4″ N, 74° 17′ 13.1″ E), Kankumbi, Sada (Belgaum District).

Habitat: Occasionally grows on lateritic plateaus of high altitude in association with *Glyphochloa* spp., *Ischaemum* spp., *Utricularia* spp.

Note: This species can be distinguished from *Jansenella griffithiana* by its sturdy nature, large spikelets, long awn and club-shaped hairs on palea of upper floret.

Distribution: INDIA: Maharashtra and Tamil Nadu.

7. *Themeda pseudotremula* Potdar, Salunkhe & S.R. Yadav, Kew Bull. 58(1): 243. 2003; Potdar *et al.*, Grasses of Maharashtra 271. 2012.

Illustration: Potdar et al., op. cit. 272, f. 116.

Flowering & Fruiting: September–October.

Exsiccata: ANC-1325.

Locality: Chugul (15° 44′ 27.0″ N, 74° 12′ 32.7″ E) (Belgaum District).

Habitat: Occasionally found in open grasslands of slopes in moist deciduous forests.

Note: This species is similar to *Themeda tremula* Hask. in habit, but it can be distinguished by its sessile spikelet entirely covered by dense, rusty-brown, stiff hairs.

Distribution: INDIA: Maharashtra.

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NORDIC JOURNAL OF

Research article

Tripogon salunkhei (Poaceae), a new grass species from Maharashtra state, India

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Tripogon salunkhei sp. nov., is described and illustrated from the Sinnar tehsil of Nashik district, Maharashtra state, India. The new species is very distinct among the species of *Tripogon* Roem. & Schult by all spikelets having two florets. Coloured photographs, distribution, and ecological notes of the new species are provided.

Keywords: Gramineae, India, new taxon, taxonomy, Tripogon

Introduction

Genus *Tripogon* is distributed in tropical, subtropical, and temperate regions of Africa, America, Asia and Australia. It is represented by 51 species worldwide (Thoiba and Pradeep 2020), with 24 species and two varieties so far recorded in India according to Clayton and Renvoize (1986) and Thoiba and Pradeep (2020). However, recently Jabeena et al. (2022) described a new species from India and presently *Tripogon* comprises 27 taxa in India of which 17 species are endemic. Most of these species are restricted to the peninsular India, while only a few species are distributed towards the northern part of India (Thoiba and Pradeep 2020, Jabeena et al. 2022). The genus is easily identified by having a single terminal raceme and laterally compressed spikelets with two to several florets, and 3-nerved lemmas (Clayton and Renvoize 1986).

During the exploration of the Nashik district in 2021, we came across an interesting population of the genus *Tripogon* growing in open hilly slope areas in Sinnar tehsil of Nashik district. At first sight, the plant looked very different due to its dwarf habit and spikelets with only two florets. After screening a number of individuals from the population, we found that the population possesses consistent characters. During subsequent seasons observations were made on the consistency of the aforesaid characters and it became evident that they remained constant. After critical analysis and consultation of the relevant literature (Bor 1960, Shukla 1996, Kabeer and Nair 2009, Potdar et al. 2012), and examination of the protologue (Hooker 1897) and type of *T. trifidus* Munro ex Hook.f. (K000245010 digital image!) we concluded that our plant is allied to *T. trifidus*. However, it is very distinct in the characters which are provided in Table 1 and is described here as *Tripogon salunkhei* Gosavi, Madhav and Chandore sp. nov.

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Table 1. Morphological comparison between Tripogon salunkhei Gosavi, Madhav & Chandore sp. nov. and T. trifidus Munro ex Hook.f.

Characters	Tripogon salunkhei	Tripogon trifidus
Height of plant (cm)	5–8	20–95
Leaf sheaths length (cm)	1.0-2.5	4-12
Leaf blade dimensions (cm \times cm)	$1.0-5.0 \times 0.3-0.6$	$10-70 \times 0.1-0.2$
Florets in spikelets	strictly 2-florets	5–20 florets
Width of lower glumes (mm)	0.2–0.3	0.5–0.7
Upper glumes dimensions (mm \times mm)	$3.0-4.5 \times 0.4-0.6$	$3-5 \times 1.0-1.2$
Apex of upper glumes	entire, acute to obtuse	2-toothed, mucronate or minutely awned at sinus
Lemmas	2.5–3.0 × 0.7–1.0 mm; median awns 1.5–2.5 mm long	3.0–4.5 × 1–1.3 mm; median awns 2.8–4.5 mm long
Palea	margin sparsely scaberulous, apex always bi-fid	margin densely ciliate, apex entire
Caryopse dimensions (mm \times mm)	$1.2 - 1.4 \times 0.3 - 0.4$	$1.6-2.5 \times 0.25-0.3$



Figure 1. *Tripogon salunkhei* sp. nov.: (a) habitat, (b–c) plants growing on rock cleft, (d) single plant with spikes. Photographs by K.V.C. Gosavi and A.N. Chandore.

Taxonomy

Tripogon salunkhei Gosavi, Madhav & Chandore sp. nov. (Fig. 1–4)

A new species similar to *T. trifidus* in having asymmetrical lower glumes, apices of lemma bi-lobed, a distinguished, straight or recurved, scabridulous median awn (more than 1.5 mm long), lateral lobes of lemmas shortly mucronate at apex, but differing in height (5–8 versus 20–95 cm), all spikelets consisting of only 2-florets (versus 5–20-florets), acute to obtuse and entire apex of upper glumes, (versus 2-toothed, mucronate or minutely awned at sinus), median awn of lemmas 1.5–2.5 mm long (versus 2.8–4.5 mm), palea margin sparsely scaberulous and apex

always bi-fid (versus margin densely ciliate and apex entire). More detailed diagnostic characters are provided in Table 1.

Type: India, Maharashtra state, Nashik District, Sinnar Tehsil, on the way to Akole, Sonewadi, 19 Aug. 2021, K.V.C. Gosavi & A.N. Chandore KVCG-5191 (holotype: CAL; isotypes BSI, SUK).

Etymology

The specific epithet *'salunkhei'* honours Dr Chandrakant B. Salunkhe, principal and head of the Department of Botany in Krishna Mahavidyalaya, Rethare BK., Karad, Satara for his remarkable contribution in the field of angiosperm taxonomy and particularly in grasses.



Figure 2. *Tripogon salunkhei* sp. nov.: (a) plant, (b) ligule, (c) spike, (d) piece of spike, (e) spikelet, (f) florets, (g) lower glume, (h) upper glume, (i) lower lemma, (j) palea, (k) upper lemma, (l) palea, (m) stamens, (n) lodicules, (o) pistil, and (p) caryopsis. Photographs by K.V.C. Gosavi.





Figure 3. Comparative account of *Tripogon salunkhei* sp. nov and *T. trifidus. Tripogon salunkhei* sp. nov.: (a) plant, (c) spikelet, (e) floret, (g) lower glume, (i) upper glume, (k) palea, and (m) apex of palea. *T. trifidus*: (b) plant, (d) spikelet, (f) floret, (h) lower glume, (j) upper glume, (l) palea, and (n) apex of palea. Photographs by K.V.C. Gosavi.

Description

Perennial caespitose herb. Culms 5–8 cm tall with basal part covered in old leaf sheaths; nodes glabrous. Leaf sheaths distichous, persistent, 1.0-2.5 cm long, coriaceous, glabrous, prominently 5-7-nerved, with hyaline margins; basal leaf sheaths papery. Ligule ca 0.5 mm long, with a tuft of hairs and a few marginal hairs up to 1.5 mm long. Leaf blades $1.0-5.0 \times 0.3-0.6$ cm, flat or involute, linear, glabrous, ca 9-nerved, abaxially glabrous to sparsely hairy, adaxially densely hirsute, with entire margins and acute apex. Racemes terminal, ca 7 cm long, with 18-25 spikelets; rachis glabrous, angular, with scabrid angles. Spikelets 4-5 mm long, alternately arranged on axis, distant, laterally compressed, strictly 2-flowered. Florets similar in size and shape at blooming time; rachilla of upper floret 1.0–1.2 mm long; floret callus bearded with 0.5-1.0 mm long hairs. Lower glumes $2.0-2.7 \times 0.2-0.3$ mm, 1-nerved, membranous, asymmetrical, ovate, with hyaline margins, acuminate at apex. Upper glumes $3.0-4.5 \times 0.4-0.6$ mm, ovate-elliptic to lanceolate, 1-nerved, membranous, acute to obtuse at apex, sparsely scabrous. Lemmas $2.5-3.0 \times 0.7-1.0$ mm (excluding awn), membranous, glabrous, grey-green, 3-nerved, bilobed; lobes acute to shortly mucronate at apex; median awn

1.5–2.5 mm long, straight or curved, scabridulous. Paleas 2.0–2.3 \times 0.6–0.8 mm, papery, hyaline, obovate to elliptic, with keeled margins, entire, smooth, bifid at apex. Stamens 3; filaments glabrous, 0.2–0.4 mm long (before anthesis); anthers 1.2–1.5 mm long. Lodicules 2, ca 0.2 mm long, cuneate, two-lobed at apex, membranous. Ovary ca 0.4 mm long, globose with 2 styles; stigmas ca 0.8 mm long, purplish, feathery. Caryopses 1.2–1.4 \times 0.3–0.4 mm, ovate to elliptic, terete, dark brown.

Phenology

Flowering and fruiting: July-November.

Distribution and ecology

Presently the new species is only known from the type locality, Sonewadi, and surrounding areas of Sinnar tehsil, Nashik district, Maharashtra. The distribution covers around 2 km² area and grows on slopes, clefts of rocks in open areas. The common associated plants are *Actiniopteris radiata* (Sw.) Link, *Aerva lanata* Juss. ex Schult., *Apluda mutica, Coleus barbatus* (Andrews) Benth. ex G.Don, *Cyanotis* sp., *Kickxia ramosissima* Janch., *Senecio edgeworthii* Hook.f., *Senecio hewrensis* (Dalzell) Hook.f., *Tripogon jacquemontii* Stapf, etc.



Figure 4. *Tripogon salunkhei* sp. nov. (illustration): (a) plant, (b) ligule, (c) spikelet, (d) lower glume, (e) upper glume, (f) lower lemma, (g) palea, (h) upper lemma, (i) palea, (j) stamens, (k) pistil and lodicules, and (l) caryopsis. Illustrated by N.A. Madhav.

Similar species

Species of the genus *Tripogon* can be differentiated into three groups based on the nature of the lemma tip, viz. unlobed, bilobed and more than two-lobed. Among the Indian *Tripogon* species 13 species have bi-lobed lemmas. *Tripogon trifidus* and *T. salunkhei* can be differentiated from other bi-lobed species by sharing a combination of characters, such as densely ciliate ligules, median awn of lemma equal or twice to thrice times longer than the lemmas, straight or recurved awns, acute to mucronate lateral lobes and narrowly winged paleas. The diagnostic differences between these two species are given in the diagnosis above and in Table 1.

Additional specimens examined (paratypes)

India, Maharashtra state, Nashik District, Sinnar Tehsil, towards the way of Akole, Sonewadi, 16 Oct. 2022, K.V.C. Gosavi & N.A. Madhav KVCG-5202 (BSI).

Acknowledgements – Authors are thankful to the curators of the Royal Botanic Gardens, Kew for providing online images of types specimens. We are thankful to the principals, of respective colleges for laboratory facilities; and Dr Sharad S. Kambale from the Department of Botany, MVPS's, Arts, Commerce and Science College, Tryambakeshwar, Nashik for their valuable comments on nomenclature.

Author contributions

Kumar Vinod Chhotupuri Gosavi: Conceptualization (lead); Data curation (equal); Formal analysis (equal); Investigation (lead); Methodology (equal); Supervision (equal); Writing – original draft (equal); Writing – review and editing (equal). Nilesh Appaso Madhav: Conceptualization (supporting); Data curation (equal); Formal analysis (equal); Investigation (supporting); Methodology (equal); Writing – original draft (equal); Writing – review and editing (supporting). Arun Nivrutti Chandore: Conceptualization (equal); Data curation (supporting); Formal analysis (equal); Investigation (equal); Methodology (equal); Supervision (equal); Writing – original draft (equal); Writing – review and editing (equal).

Data availability statement

This article has no additional data.

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List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/institution / industry/ corporate house with whom the MOU/ collaboration/linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	Chaitanya Psychology Study Centre	2022-23	1.	2022	Internship program for Psychology Students



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

Without Prejudice, Memorandum of Understanding (MOU) Between Gokhale Education Society's HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 & Chaitanya Psychology Study Centre, Gangapur road, Nasik

This document constitutes as Memorandum of Understanding (MOU) between

HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 and Chaitanya Psychology Study Centre, Gangapur road, Nacik

1. Aim of this MOU:

Knowledge exchange for students and practical skills training through workshops, seminars, and guest lectures.

Vide this MOU both the parties agree for the same with mucual consent.

2.Objectives:

The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

Internship / case history taking

Pre-Counseling in interactive manner & Discussion under professional's guidance

Joint research and publications

Resources sharing and exchange

3)This MOU shall be effective only after HPT Arts and RYK Science College, Nashik

and Chaitanya Psychology Study Centre, Gangapur road, Nasik mutually agreed the torms & conditions.

4. General Terms Of MOU:

4a)Duration of MOU: This MOU shall be operational upon signing and will have initial duration of 20/06/2022 to 31/05/2023. All Activities conducted before this date within the vision/objects of this joint collaboration will be deemed to fail under this MOU.

4b)Coordination: In order to carry out and fulfil the aims of this MOU, each party is appoint an appropriate person(s) to represent its organization and to coordinate, implementation of activities. Full names, designations, Mobile nos, Email .Do of such persons will be incorporated in this MOU.

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4c)*Financial Implementations:* There is no financial cost, liability in any manner whatsoever is involved in this MOU from both the parties. No right/title/interest in any manner will be created in the either of college properties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's and teacher's benefit at large.

4d) Confidentiality: Each party agrees that it shall not, at any time, after executing the activities of this MOU, will disclose any information without mutual consent.

4e)Termination of MOU: This MOU shall terminate any time with 1(One) month prior written notice to each other by both the parties without assigning any reason.

4f) Extension of MOU: This MOU will be further extendible by 1(One) year, at the mutual consent of both parties on further mutually agreed terms.

4g)Communications: All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email followed by Registered Post A/D to the other party.

4h)Addendum: Any addendum to this MOU shall be in writing & signed by both the parties.

Herewith both the parties confirm that provisions in this MOU does not go against the rules and regulations of the Government policies.

Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU.

IN WITNESS WHEREOF, the parties hereto have executed this MOU on 20/06/2022



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Coordinator Coordinator CHAITANYA PSYCHOLOGY reserve Mob.:5390614667 Govi. Reg. No. MH-23-0000560) . 42 . Chaitanya Psychology Study Centre, HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Gangapur road, Nasik Signature, Name, Designation, Mobile NO., Signature, Name, Designation, Mobile NO., Email. Dr. Rojershree Kapure, Email. 9890614667 Asst-Prof. & HOD, 9922241133 rojashree470@gnail. chaitanga RSy23@gmail.com Witnesses: Full Name, Signature, Date 1) Archana Gattal-More - more 2) Miss Annach kaur Rens Apeny. 3) Anii Shanta Can Broct Aronsman 4) Mg. Auishkan yanguade



Ref. No.

To,

Date :

Date:16/8/2022

Mr. Tanmay L. Joshi Chaitanya Psychology Study Centre Nashik-422013.

Sub: Internship for Psychology students

We are happy to have a MoU with you. Some of our students are willing to develop their interest in the field of psychology. Therefore, in this academic year 2022-23, we would like to send some of our students from various classes at your place so that they can develop their application-oriented knowledge in the subject.

Please let us know, as how you can engage them in psychology related activities.

Alleyne

Dr. R. S. Kapure

HOD Psychology HEAD D-PAT: INILN: OF PSYCHOLOGY H.P.T. Arts & R.Y.K. St. College, Nechik-5



Gov. Reg. No: MH-23-0000568

M: 9890614667

https://www.chaitanyapsychology.com

To

Dr. R.S. Kapure Madam, HOD Psychology Dept.

HPT Arts & RYK Science College, Nashik

Respected madam, it is my pleasure to work with your institute. At our institute we do provide practical exposure in the field of Psychology. Following activities, we do conduct frequently where your students can participate to gain some additional knowledge and hands on experience. Counselling, Graphology & Graphotherapy, Competitive exam preparation etc.

Please, share the list of students who are willing to join these activities.

Mr. T. L. Joshi



	Name of the student	Class
1	Durva Zankar	MA-1
2	Srushti Joshi	MA-1
3	Shradha Kulkarni	MA-1
4	Mrunmai Hudlikar	MA-1
5	Rashi Dewani	MA-1
6	Priyanka Parakh	MA-1
7	Akshata Dhotre	MA-1
8	Gauri Sambre	ТҮ
9	Enoch Tribhuvan	TY
10	Manisha Dinger	TY
11	Tina Patil	TY
12	Prerna Tiwari	TY
13	Akshada Salsingikar	TY
14	Sameep Shirsath	TY
15	Amatullah Merchant	ТҮ
16	Jaswandi Kakad	SY
17	Shamika Joshi	SY
18	Siddhi Birari	SY
19	Prachi Joshi	SY
20	Jiya Tendulkar	SY
21	Shreya Pardesshi	SY
22	Harshada Naik	SY
23	Kalyani Shewale	SY
24	Kadambari Surve	SY
25	Jay Naik	SY
26	Harshita Agrawal	SY
27	Shreeya Dixit	SY
28	Kaveri Jagtap	SY
29	Harsh Hire	SY
30	Yukta Sharma	SY
31	Shravni Dixit	SY
32	Siddhant Panchbhai	SY
33	Riya Wagh	FY
34	Raheen Kazi	FY
35	Anagha Chakor	FY
36	Amruta Bam	FY
37	Dheeraj Tayde	FY
38	Shreya Gajria	FY
39	Parisa Hajare	FY
40	Ovee Hirey	FY
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		Academic Ye	ar: 2022-23	
Sr. No	Name of the Volunteering Group	Duration of	Internship	Activity conducted
	MA-2 Students	30-8-22	30-10-22	Counselling skills/ Personality assessment
2	MA-1 Students	25-11-22	25-1-23	Counselling skills/ Report writing
ω	TY Students	1-2-23	31-3-23	Counselling Skills/ Compt. Exam preparation
4	SY Students	1-2-23	15-4-23	Counselling Skills/ Grapho-therapy
5	FY Students	3-9-22 /	4-10-22	Graphology

HPT Arts & RYK Science College, Nashik-5. Dopade INE NI OF DEVCHICLOGY-H PT Arts & RYK Sk College, Middle 5

Co-ordinator pulliper.

Member

Ms. Avinash k. Renu

Mr. T. L. Joshi

Chaitanya Psychology Study Centre

CHAITANYA PSYCHOLOGY

TI July President

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CPSC – Internship Activities – 2022-23













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List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	Gramonnati, Mandal's Arts Commerce and Science College, Narayangaon	2022-23	1.	2022	Online Lecture on "Implementation of NEP- 2020 in Senior College"



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

Memorandum of Understanding (MOU)

JZAC

Between

Internal Quality Assurance Cell (IQAC), H.P.T. Arts and R.Y.K. Science College, Nashik, Maharashtra- 422005

\$ &

Internal Quality Assurance Cell (IQAC), Gramonnati Mandal's Arts, Commerce & Science College, At: Warulwadi, Post: Narayangaon, Taluka: Junnar, District : Pune, 410504

Aim of this MOU: 1.

Knowledge exchange for students and staff training through workshops, seminars, a guest lectures, visits to laboratory, student's projects.

2. Objectives:

O

- The objective of this MOU is to express the willingness of both parties to engage in an eff to promote collaborative activities in the following areas:
- Visits / Study Tour 0
- Research activities, 0
- Training program,
- Quality initiative and implementation strategy sharing,

This MOU shall be effective only after HPT Arts and RYK Science College, Nasl 422005 and Gramonnati Mandal's Arts, Commerce & Science College, Narayanga mutually agree the terms & conditions.

3. General Terms of MOU:

The terms and conditions are as follows:

- 1. This MoU shall be operational upon signing and will have initial duration of 1 (One) year the is from 15/06/2022 to 14/06/2023. All activities conducted during these dates within 1 vision /objects of joint collaboration will be deemed to fall under this MOU.
- In order to carry out and fulfil the aims of this MOU, each party to appoint an appropri person(s) to represent its organisation and to coordinate, implementation of activities, F 2. names, designations, mobile numbers, Email Ids of each persons will be incorporated in t
- 3. Company shall be responsible only for student's on job training. Any other factor shall be student's own responsibility
- Student's candidature as a trainee may stand cancelled if observed that he / she fails maintain / abide to company rules & regulations for trainees or on exhibiting a 4. misbehaviour during training hours.

- 5. Company shall not bear any transport facility to the trainees.
- 6. Company may pay any stipend to the trainees during this training program
- There is no financial cost; liability in any manner whatsoever is involved in this MOU I nere is no manoral cost, and the interest in any manner will be created in the either from both the parties. No right/title/interest in any manner will be created in the either trom dout the parties. It is the starting in any manual will be created in the either college properties and, or, otherwise by anybody. There will be no cost, charge by HPT A 7. college properties and, etc. Nashik- 422005 as the aforesaid objective is being carried out and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out and KIN bolonies control, for the sake of student's and teacher's benefit at large. the form of voluntary activity for the sake of student's and teacher's benefit at large. the form of voluntary dotted, and the state of and leacner's benefit at large. Each party agrees that it shall not, at any time, after executing the activities of this MOU, v
- disclose any information without mutual consent. 8.



All communications by both the parties shall be done by Email, ordinary post. Only in case termination of MOU communication will be done by Email followed by Registered Post A to the other party.

In order to promote Academic and Research co-operation between the students and faculty both the institutes, it is agreed that the areas like Academic activities, Placements, Jacobs collaborative research activities and Students practical set of co-operation should developed.

- 11. It is agreed between two institutes will participate / undertake the above mentioned activi with prior information from the Head of both institutes.
- 12. Other common activities that could help to enhance co-operation, such as joint seminars, fivisits, awareness programme, exhibitions etc.
- 13. This MOU will be further extendible by 1(One) year, at the mutual consent of both parties further mutually agreed terms.
- 14. The term of this agreement may be amended at any time by mutual written consent of parties.
- 15. Either company or Institution may terminate this agreement by giving prior notice to of institution any time in the study period if desired. In case of termination, the acade programme of the students currently enrolled should not be affected.
- 16. Any addendum to this MOU shall be in writing & signed by both the parties.
- 17. Herewith both the parties confirm that a provision in this MOU does not go against the ri and regulations of the Government policies.

Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU. Hence the memorandum of understanding is signed.

Vide this MOU both the parties agree for the same with mutual consent.

IN WITNESS WHEREOF, the parties here to have executed this MOU on 15/06/2022

morshpant PRINCIPAL H.P.T. Arts / R.Y.K. Sc. College Nashik Nasik - 5. 05 PRINCIPAL Dr. M. D. Deshpande Principainerce & Science College I/C Principal, Gramoniati Mandal's Arts, Commerce & HPT Arts and RYK Science College, Science College, Narayangaon, Dist-Pune, Nashik, Maharashtra- 422005 410504 Contact No. 8046881410 Contact No. 9881059272 college.gmacs@gmail.com prinhptryknsk@rediffmail.com Coordinator Marbured Coordinator 6 Co-ordinator ICAC Junas HPT Arts & RYK Science College Nashik -5. Prof. Dr. A. B. KulkarnNAAC Coordinator Dr. P. U. Ratnaparkhi Coordinator, IQA Arts, Commerce & Science Colle Gramonnati Mandal S Arts Science College, Narayangaon, Dist-Pune, Coordinator, IQAC, HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Contact No- 9527379277 Contact No. 9823016230 iqac@hptrykcollege.com Arts, Commerce & science College Narayangaon, Pune - 410 504 Witnesses: Hole Wappet Baban - Upnan Josmale Chetom Jagter Gojanan R. (Miter H.A. Khairna SCIE Page 2 Nashik

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Invitation

Internal Quality Assurance Cells of



Gokhale Education Society's HPT Arts & RYK Science College, Nasik

&

Gramonnati Mandal's Arts, Commerce and Science College, Narayangaon

jointly organise

Special Online Lecture

on

'Implementation of NEP-2020 in Senior Colleges'

Expert Speaker



Dr. Sandhya Khedekar

(Principal, College of Education, Sangamner Founder and Chairman of Empowered Butterflies Educational Trust, Mumbai)

> Day & Date: Thursday, 22 September 2022 Time: 12 pm to 1 pm

> Platform: Zoom and YouTube Live Stream

Dr. V. N. Suryawanshi (Principal) Dr. Pranav Ratnaparkhi (IQAC, Coordinator)

HPT Arts & RYK Science College, Nasik Dr. S.S. Shewale (Principal) Dr. Anand Kulkarni (IQAC, Coordinator)

Arts, Commerce and Science College, Narayangaon

Timestamp	Email Address	Your Full Name (Surname, Name, Middle Name)	Gender	Name of College	Your Mobile No	How informative did you find online lecture?	On the scale of 1 to 10 how will you rate the content of special lecture?	On the scale of 1 to 1 how will you rate the speaker's knowledge of topic?	 Do you think such lectures should be conducted 	Any other suggestions.						
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9/22/2022 12:38:24	mahajanmanisha07@g	mi Mahajan Manisha Nilesh	Female	HPT Arts and RYK Science college	955279457	Very Informative		8	8 Quarterly							
9/22/2022 12:38:24	safrinshaikh000@gmail	I.c. Shaikh Safrin Arifmohamr	Female	College of Education Kharod	951216845	8 Very Informative		9	10 Monthly							
9/22/2022 12:38:28 9/22/2022 12:38:29	ranajasmin 167 ggmail. aaliyaansari 150 ggmail	Ict Ansari Aaliya Zamir Ahme	Female	College of education, kharod ta-Ankleshwar dis-Bharuch	910674154	Very Informative		8 0	9 Monthly 10 Monthly	Very nice meeting						
9/22/2022 12:38:33	aditipatel2304@gmail.o	ON PATEL ADITI BHARATBH	Female	COLLEGE OF EDUCATION, KHAROD	973745450	3 Very Informative	,	0	10 Monthly							
9/22/2022 12:38:39	chauhanbhumika017@	ign Chauhan Bhoomika Mahe	Female	College of education Kharod	834747093	Somewhat informative		0	10 Monthly 10 Monthly	-						
9/22/2022 12:38:51	perukathava1199@gma	ail. Rathava parulben Ramda	Female	College of education kharoda	769843230	Very Informative		0	10 Monthly	140						
9/22/2022 12:39:07	arroichawandegrediffn	ma Chawande Arnol Sureshrs	Male	Gokhale Education Society College of Education Sangamner	942071788	B Very Informative		0	10 Monthly	Nice lecture						
9/22/2022 12:39:15	homikasolarikiggmal.c	cor Solariki Homika Lallubhai om Patel sonal Balubhai	Female	College of Education, kharod College of education kharod	997826807	Very Informative		0	10 Monthly 10 Monthly	No						
9/22/2022 12:39:52	shindeyb@collegeacs.c	org Shinde Yogesh Bhagwat	Male	Gramonnati mandal ACS college Narayangaon	989004607	Very Informative		9	10 Monthly							
9/22/2022 12:39:56	uchiregpatel@gmail.com	m Lad Urvashi manharbhai	Female	College of education kharod	963758605	Very Informative	1	0	10 Monthly	Very nice						
9/22/2022 12:39:59 9/22/2022 12:40:00	vishwajeetdkadam@gm	nai Kadam Vishwajeet Dilip	Female Male	College of education, kinarod HPT Arts and RYK Science College, Nashik	704678781	Very Informative		8	9 Monthly 8 Monthly	Excellent						
9/22/2022 12:40:03	rashmikasolanki290@g	m SOLANKI RASHMIKA GII	Female	COLLEGE OF EDUCATION KHAROD	816052940	Very Informative	,	0	10 Monthly	Add in more program						
9/22/2022 12:40:06	uzzsindha98ggmail.co	m Sindha Uzma Firoz	Female	College of Education, Kharod	992563087	5 Very Informative	,	0	10 Monthly	If the video could be pos Excellent	sible on YouTube also					
9/22/2022 12:40:08	patelumi2907@gmail.c	cor Patel Urmishaben Pravint	Female	College of education kharod	769862286	2 Very Informative	,	0	10 Monthly							
9/22/2022 12:40:08	ap6726214@gmail.com	n Parmar Anjali vinodbhai	Female	Collage of education kharod	769604237	8 Very Informative		0	10 Monthly 10 Outstade	Verry good						
9/22/2022 12:41:22	jnakol25@gmail.com	Koli kumari jinal sureshbh	Female	College of education , kharod	820051628	Very Informative		9	10 Monthly	Nothing to suggest						
9/22/2022 12:41:44	geetabenrathod003@gr	mi rathod Geetaben chandut	Female	College of education kharod	769627438	5 Very Informative	1	0	10 Quarterly	No						
9/22/2022 12:41:44	prashant9390@gmail.co	on Prashant Harihar Gajare	Male	HPT Arts and RYK Science College Nashik	942274840	8 Very Informative		9	9 Quarterly 9 Monthly	No						
9/22/2022 12:42:04	yashzope7719971887@	ggZope Yash Sunil	Male	Bitco college	983462787	2 Very Informative	1	0	10 Monthly							
9/22/2022 12:42:46	poojawavhal2195@gma	ail. Wavhal Pooja Pramod	Female	Gramonna Mandals Arts commerce and Science college Marayang	µ 705751133	3 Very Informative	1	0	10 Once every two months	Webinar was helpful and	doubts clearing. Thank yo	u organisers.				
9/22/2022 12:43:16 9/22/2022 12:43:40	patelau123@gmail.com dovaosam@omail.com	PATEL SHAILESHKUMAI SHRADDHA CHANDRAS	Male Female	COLLEGE OF EDUCATION, KHAROD, DIST (BHARUCH , STATE) HPT ARTS AND RYK SCIENCE COLLEGE	C 780201223 703872500	5 Very Informative 3 Very Informative		9	9 Monthly 10 Monthly	That is Very Good Progr	am, Arrange more program					
9/22/2022 12:44:17	snehaldube47@gmail.c	cor Dube snehal Ramnath	Female	G.e.s. collage of sangmner.	907531475	2 Very Informative	1	0	10 Monthly	The lecture was very infe	armative and helpful to teac	chers & professor.				
9/22/2022 12:45:25	gaikwadash92@gmail.c	cor Gaikwad Ashwini Ashok	Female	Arts Commerce And Science College Narayangaon	965743447	Very Informative		9	9 Semi-Annual	Informative session.						
9/22/2022 12:45:46	rajashree470@cmail.co	co Mhaske Vinayak Vasant om Dr Raiashree Kapure	Mare Female	HP1 Arts and HYK science College -05 HPT Arts &RYK Science college	988114868 09922241133	Very Informative		8	9 Monthly 8 Quarterly	Those who are involved	in NEP policy making can I	be invited. Even at Indian s	et up what are the risks of t	this system need to be dis	cussed.	
9/22/2022 12:47:23	pratijedhavj@gmail.com	n Dr. Pratima Jadhav	Female	Institute of Forensic Science Mumbai	+919224746783	Very Informative		6	7 Once every two months	Pl share some copies	,,					
9/22/2022 12:48:06	lahu1919@gmail.com	Lahu Gaikwad	Male	A C S College Narayangaon.	986097134	Very Informative		0	9 Monthly	Excellent						
922/2022 12 48 32	pratichadmoniteggmai	i. o Mohite prationa dallatray	Female	Acs arts, Commerce & science college narayangaon	997515577	Very Informative			8 Monthly	t NEP तील उमीन किंवा धे	विषयस्ट्रात काम? संरक्षमा राजनिकाने धालिक सि	trans erment are?				
				100 miles himsen	-04070004770	Mar Information			7 Ouri Annul	३ जंश ऑफ मॉटस आणि NE	P गांचा तुलनात्मक विचार कर।	ता येण्यासारखा आहे.				
922/2022 12:48:40 9/22/2022 12:49:25	m kasbe 19/1 (ggmail.co	orr Mend Kasbe	Male Female	ACS college Narayangaon Ars millene Narayangaon	+919766984770	Very Informative		8	7 Semi-Annual 9 Ouarterly	Very apprd session						
9/22/2022 12:50:54	tdkulk@gmail.com	Kulkarni Tejas Deepak	Male	HPT Art's and RYK Science College	808766158	Very Informative		9	10 Quarterly	-						
9/22/2022 12:50:55	modhaveyash09@gmai	ILC PROF MODHAVE VAISH	Female	A.C.S.College Narayangaon	997050231	3 Very Informative	1	0	9 Monthly	No						
9/22/2022 12:51:22 9/22/2022 12:52:23	leenavh@gmail.com	Hunnargikar Leena V.	Female	H. P. T. Arts and R. Y. K. Science College	942306297	Very informative		0	10 Monthly	Please guide us on facul	ty based specification of to	pics. Please have more tra	aining programs for Teacher	rs so that they can get mo	e clear idea regarding how	to implement this NEP in
9/22/2022 12:53:17	kmikam05@gmail.com	Nikam Kakasaheb Rangn	Male	HPT Arts and RYK Science College Nashik	982287674	Very Informative		9	9 Once every two months	Very Useful						
9/22/2022 12:53:52 9/22/2022 12:53:58	bebupawar1620@gmail drthosalein@nmail.com	ILC Pawar BABU KANHU N DR RHOSALE JANARDA	Male Male	NB Mehta Science College Bordi Arts Commerce and Science College Naravannann Pune	814911151 +010860360733	0 Very Informative Somewhat Informative		5	3 Monthly 4 Monthly	Overall artivity was noor						
9/22/2022 12:56:08	sundesale@gmail.com	Desale Sunil Yashavantra	Male	G.E.S. College of Education, Sangamner	982224817	5 Very Informative	,	0	10 Monthly	Very well Organized						
9/22/2022 12:57:52	manoj giram@gmail.com	m Giram Manoj Baburao	Male	HPT Arts and RYK Science College, Nashik	830849989	Very Informative		8	8 Semi-Annual							
9/22/2022 12:58:00 9/22/2022 12:59:21	ravisha.tk@gmail.com uttarmawar12@nmail.r	Dr. Tak Ravisha Dhanraj	Female Male	G.M.B.Ed College, Narayangaon, Tal-Junnar, Dist-Pune. HPT Arts and RVK Science College, Nashik 422015	7840927419, 88309728	2 Very Informative Very Informative	,	9	10 Once every two months 10 Once every two months	NA						
9/22/2022 13:00:12	machhindramule@gmai	il (Mule Machhindra Prakast	Male	HOT Arts and RYK science college Nashik	997015881	Very Informative	1	0	10 Monthly	No						
9/22/2022 13:01:14	deepikabhandari2910g	ggi Dr. Deepika Bhandari	Female	Institute of Forensic Science, Mumbai	766697000	3 Very Informative	1	0	10 Monthly	Excellent information. Im	plementation guidelines fo	r NEP if given will be highl	appreciated.			
9/22/2022 13:01:49	shankarbhoir9679@om	ail Bhoir Shankar Haibati	Male	HPT Arts and RYK Science College Nashik	962382479	Very Informative		0	10 Quarterly	No						
9/22/2022 13:02:21	harpalesir@gmail.com	Harpale Dattatraya Vilas	Male	HPT Art's and RYK Science College Nashik	942352310	Very Informative	,	0	10 Monthly	Nice presentation and gr	ood organization.					
9/22/2022 13:02:22	mdpatii@hptrykcollege	co Patil Manisha Dadabhau	Female	HPT Arts and RYK Science College, Nashik	883082317	8 Very Informative		9	10 Quarterly	Constant constants						
9/22/2022 13:02:31	akale2010@gmail.com	Prof. Dr. Anil Kale	Male	ACS College Narayangaon Tal. Junnar Dist. Pune	986070685	3 Very Informative		8	9 Quarterly	Excellent organisation						
9/22/2022 13:03:40	autivg@collegeacs.org	Auti Vishal Gangadhar	Male	Arts commerce and science college naryangaon	770996329	Very Informative	,	0	10 Monthly	Very good information						
9/22/2022 13:03:45	nggawade1792@gmail.	.cc Mr. Gawade Nilesh Gulab	Male	ACS College , Narayangaon. Tai-Junnar , Dist-Pune.	942006344	2 Very Informative		0	10 Once every two months	No. Thank you.						
9/22/2022 13:06:26	bebruvan.pawar1234@	gr Pawar Babruwan Sheshrs	Male	HPT Arts and RYK Science College	738742234	Very Informative		6	5 Monthly							
9/22/2022 13:06:27	singhguptasupriye@gm	nai Dr. Supriya Singh Gupta	Female	HPT Arts and RYK Science College	997015029	7 Very Informative		8	9 Monthly	We could have incorpora	ited Discussion session.					
9/22/2022 13:06:31 9/22/2022 13:07:13	mdpatiighptrykcollege neetanaramanBridcorr	.co Patil Manisha Dadabhau nlk Dr.Geeta Premii Parmar	Female Female	HPT Arts and RYK Science College, Nashik KSKW Arts Science and Commerce College Cidro Noshik	883082317	3 Very Informative 3 Very Informative		9	10 Monthly 10 Quarterly	Very nice organization a	nd lecture					
9/22/2022 13:08:05	vupatii@hptrykcollege.c	co: Patil Vidya Uttamrao	Female	HPT/RYK College, Nashik	951170564	7 Somewhat Informative		8	8 Quarterly							
9/22/2022 13:08:38	arghumatkar@gmail.co	m Dr Mrs Ghumatkar Anurac	Female	A.C.S.College Narayangaon	976318580	8 Very Informative		9	10 Monthly	Informative session						
9/22/2022 13:08:55	akshavwajaqe67@cma	al.: Wajage Akshay Jalindar	Male	Arts. Commerce and Science Naravangaon	9/664/812	Very Informative		9	9 Once every two months	NO						
9/22/2022 13:10:21	maheshnilaje@gmail.co	om Nilaje Mahesh Baburao	Male	Shri Vijaysinha Yadav College, Peth Vadgaon	996016069	Very Informative	,	0	10 Quarterly	Nil						
9/22/2022 13:12:45	gorakhjondhale1988@g	gm Jondhale Gorakh Popat	Male	HPT Arts & RYK Science College, Nashik	915889987	Very Informative		9	9 Once every two months 7 Somi Approxi	No						
9/22/2022 13:20:11	dr.ashokkanade@gmail	Lo Kanade Ashok Mahadeo	Male	Arts. Comm & Science college Narayangaon	880087212	Very Informative		9	10 Quarterly	No						
9/22/2022 13:20:32	ahire prashant36ggma	ALI AHIRE PRASHANT UTTA	Male	H P.T. art's and R.Y.K.Science College Nashik	942083765	Very Informative	,	0	10 Quarterly							
9/22/2022 13:20:37	swapnalikadam1611@g	gm Kadam swapnali Shivaji	Female	ACS College Narayangaon HPT Arts & RYK science college Noshik	986091586	Somewhat Informative		9	0 Monthly 9 Monthly	No						
9/22/2022 13:28:34	satishkfulsundar@gmai	Le FULSUNDAR SATISH KI	Male	ARTS, COMMERCE & SCIENCE COLLEGE, NARAYANGAON	770955701	Somewhat Informative		8	10 Once every two months	NO						
9/22/2022 13:28:36	kakdesonal@gmail.com	n Kakade Sonal Vasant	Female	ACS College Narayangon	702084687	Very Informative		0	10 Monthly	No						
9/22/2022 13:29:23 9/22/2022 13:30:40	dsp_shivane@redifma archana.ga%cl74R	at convene Dilip Bhimreo all More Archana Pradio	Male Female	Gramonnati Mandals ACS College Narayangaon (Pune) HPT Arts and RYK Science College Nachia	995038031	Very Informative	-	0	9 Monthly 10 Quarterly	No Such information service	ts need to convivut					
9/22/2022 13:30:20	inshajagirdar1998@gm	ail Jagirdar Insha Zulkamain	Female	HPT Arts and RYK Science College	+917588833086	Very Informative	1	0	10 Quarterly	It was very informativel						
9/22/2022 13:33:49	bhamarevinayakn@gm	ail vinayak nago bhamare	Male	vinayak nago bhamare	09421561748	Very Informative	1	0	10 Once every two months	No						
9/22/2022 13:51:15	rahuloonoe72/Domail.com	on Rahul Balkeishna Coone	Male	Art's commerce college Naravangaon	963778145	Very Informative	1	9	9 Monthly	- Elaborate various esner	ts one by one					
9/22/2022 14:02:04	apamadhepe77@gmail	Lo Dhepe Apama Balasaheb	Female	ACS College Narayangaon	909699714	Very Informative	,	0	10 Once every two months	Nice and informative ses	sion					
9/22/2022 14:26:17	raj7644@gmail.com	Mahanawar Rajendra Bhi 8 SHINDE VAIRUM RAMM	Male Male	A.C.S. college Narayangaon Junnar Pune Shri Shivai Mahavitvalava Bardhi	992261764	Somewhat Informative		7	8 Monthly 10 Once even: two months	No Informative instrume						
9/22/2022 15:07:43	csghuge21@gmail.com	Ghuge Chandrashekhar 5	Male	HPT ARTS & RYK SCIENCE COLLEGE NASHIK	942357430	5 Very Informative		9	9 Monthly							
9/22/2022 15:14:20	royswapna2005@yaho	o.cRoy Swapna	Female	HPT arts and RYk science college	976846942	2 Very Informative		9	10 Once every two months							
9/22/2022 15:25:47 9/22/2022 15:34:40	depthakumsk@gmail.or vinavaktkute@red/ifmail	on Thakur Dilip Chandrasing ILc Kute Vinavak Tukaram	Male	N. B. Thakur Law College, Nashik Arts Commerce and Science College Naravangage	770917636	very Informative		9	9 Quarterly	What is the role of Admir	variation Staff					
9/22/2022 15:57:54	shirtarp@gmail.com	Shirtar Pravin Vishnu	Male	GMACS college Narayangaon	738758152	B Very Informative		9	9 Once every two months	Nice lecture and Nice an	rangements					
9/22/2022 17:33:14	rasuljamadar03@gmail	Lot Dr. Jamadar Rasul Jafar	Male	ACS College Narayangao Junner	09975769786	Very Informative	1	0	10 Monthly	Scope to organise Same	session on draft submitted	to Govt of mahy				
9/22/2022 22:02:44	snehaldube47@gmail.c	cor Dube snehal ramnath.	Female	Gokhale education society collage of education sangmer.	907531475	2 Very Informative	,	0	10 Monthly	The lectures was very h	alpful, informative for Teach	ters & professor.				
0/22/2022 10 61:22	upporthance@page.oll.com	DATHADE LITTAM ADDA	Mala	Artis Commonia Releases College Northugenges Tol. Junear Diet. D.	007569101	Many Information		•	R Monthly	No						







Permanently Affiliated to Savitribai Phule Pune University (ID No.: PU/NS/AS/001(1924) NAAC Re-Accredited: 'A' Grade | ISO 9001:2015 Certified | Best College award by SPPU 2019-20

List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/ institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	ARNI Analytical, Pandit Colony Lane No.3, Nashik. M.S. India 422002	2022-23	1.	2023	Pharmaceutical Training Course in Analytical Techniques



RINCIPAL RYK (SC.) COLLEGE

SHIK -5

HPT (ART
31

Without Prejudice, Memorandum of Understanding (MOU) Between

Gokhale Education Society's

HPT Arts and RYK Science College, Nashik, Maharashtra- 422005

&

ARNI Analytical

Pandit Colony Lane No 3, Nashik, Maharashtra- 422 002

This document constitutes as Memorandum of Understanding (MOU) between HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 and ARNI Analytical Pandit Colony Lane No 3, Nashik, Maharashtra- 422 002 on 1st November 2022

1. Aim of this MOU:

Enhancing educational opportunities, research capabilities, and industry collaboration.

2.Objective:

The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

2a) Collaborative Academic Programs

- 2b) Industry-Relevant Training
- 2c) Resources sharing
- 2d) Resource person for knowledge sharing.
- 2e) Training and Workshops
- 2f) Internships and Placements Assistance
- 2g) Access to Specialized Equipment

3) This MOU shall be effective only after HPT Arts and RYK Science College, Nashik and ARNI Analytical Pandit Colony Lane No 3, Nashik mutually agreed the terms & conditions. 3a) In case of Students and faculty internship program, both have to follow all rules and regulation lead by the HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 & ARNI Analytical Pandit Colony Lane No 3, Nashik, Maharashtra- 422 002 Individual cannot claim for any stipend or financial support from both the parties.

3b) Any kind of Misbehave, theft, physical injury, etc. will lead in to legal action against the individual.

3c) Any breakage or damages to the resources of both the parties will result into penalty from the individual.

4. General Terms Of MOU:

4a) Duration of MOU: This MOU shall be operational upon signing and will have duration of 1 (One) year i.e. on or before 31st October 2023. All Activities conducted before this date within the vision/objectives of this joint collaboration will be deemed to fall under this MOU.

4b) Co-ordination: In order to carry out and fulfil the aims of this MOU, each party to appoint an appropriate person(s) to represent its organization and to coordinate, implementation of activities. Full names, designations, Mobile numbers, Email IDs of such persons will be incorporated in this MOU.

4c) *Financial Implementations:* There is no financial cost, liability in any manner whatsoever is involved in this MOU from both the parties. No right/title/interest in any manner will be created in either of parties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's, teacher's and industries benefit at large.

4d) Confidentiality: Each party agrees that it shall not, at any time, after executing the activities of this MOU, will disclose any information without mutual consent.

4e) Termination of MOU: This MOU shall terminate any time with 1(One) month prior written notice to each other by both the parties without assigning any reason.

4f) Extension of MOU: This MOU will be further extendible by 3 (Three) years, at the mutual consent of both parties on further mutually agreed terms.

4g) Communications: All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email followed by Registered Post A/D to the other party.

4h) Addendum: Any addendum to this MOU shall be in writing & signed by both the parties.

Herewith both the parties confirm that provisions in this MOU does not go against the rules and regulations of the Government policies. Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU.

IN WITNESS WHEREOF, the parties here to have executed

HPT Arts and RYK Science College, Al Nashik, Maharashtra- 422005 Pa

ARNI Analytical, Pandit Colony, Lane No 3, Nashik, Maharashtra- 422 002

Prof. Dr. S. J. Kharat Head & Professor, Dept. of Chemistry, hodchemistry@hptrykcollege.com

Head Of The Chemistry Department MARYK College, Nashik-5 Mr. Masum Deshmukh, Director, ARNI Analytical, Pandit Colony, Lane No 3, Nashik, Maharashtra- 422 002 arnianalyticals@gmail.com **Coordinator** person on behalf of **Chemistry Dept, HPT Arts and RYK Science College, Nashik, Maharashtra- 422005**

Satt

Prof. pr. S. v. patil (Wordenator) Orpt of Chemisery 4p7 Aris & Ryk Strence 1) Wilege, Nashik-03.

OL. A. Gr. Oholi Olpt Of Chemistry Hp7 Arts & Ryk Science 3) college, Nashik-03. **Coordinator** person on behalf of **ARNI Analytical, Pandit Colony, Lane No 3, Nashik, Maharashtra- 422 002**

Aushmukt 2) Archana Masum Deshmulch

4)

N ARNI ANALYTICAL

Add.: Pushpak Apartment, Flat No. 102, Lane No. 3, Near Neurocare Hospital, Pandit Colony, Nashik. e-mail : arnianalyticals@gmail.com | Web Site : www.arnianalyticals.com



This is to Certify that <u>Pooja Shivaji Aher</u> has Successfully Completed Pharmaceutical Training Course in Analytical Techniques includes Practically Handling the Instruments Like HPLC, UV - Spectrophotometer, Dissolution Test Apparatus & Pharmaceutical Instruments in the Training Period From <u>Keb. 2023</u> To 12 Mar. 2023



OD MOULA

Director



Add.: Pushpak Apartment, Flat No. 102, Lane No. 3, Near Neurocare Hospital, Pandit Colony, Nashik. e-mail : arnianalyticals@gmail.com | Web Site : www.arnianalyticals.com



b

This is to Certify that **Nisha Shivaji Jadhav** has Successfully Completed Pharmaceutical Training Course in Analytical Techniques includes Practically Handling the Instruments Like HPLC, UV - Spectrophotometer, Dissolution Test Apparatus & Pharmaceutical Instruments in the Training Period From <u>8 Feb. 2023</u> To <u>12 Mar. 2023</u>









Add.: Pushpak Apartment, Flat No. 102, Lane No. 3, Near Neurocare Hospital, Pandit Colony, Nashik. e-mail : arnianalyticals@gmail.com | Web Site : www.arnianalyticals.com



Instruments in the Training Period From 8 Feb. 2023 To 12 Mar. 2023 has Successfully Completed Pharmaceutical Training Course in Harshada Bharat Godse Analytical Techniques includes Practically Handling the Instruments Like HPLC, UV - Spectrophotometer, Dissolution Test Apparatus & Pharmaceutical This is to Certify that



Director



Permanently Affiliated to Savitribai Phule Pune University (ID No.: PU/NS/AS/001(1924) NAAC Re-Accredited: 'A' Grade | ISO 9001:2015 Certified | Best College award by SPPU 2019-20

List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	Manoday Mind Care Clinic & Sunshine Counselling & Therapy Center, Nashik	2022-23	1.	2023	Group Counselling Session. Lecture by Dr. Hemant Sonanis



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

Without Prejudice, *Memorandum of Understanding (MOU)* Between Gokhale Education Society's HPT Arts and RYK Science College, Nashik, Maharashtra- 422005

Manoday Mind care Clinic & Sunshine Counselling & Therapy Centre, Nasik

This document constitutes as Memorandum of Understanding (MOU) between

HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 and Manoday Mind care Clinic & Sunshine Counselling & Therapy Centre , Nasik

1.Aim of this MOU:

Knowledge exchange for students and practical skills training through workshops, seminars, and guest lectures.

Vide this MOU both the parties agree for the same with mutual consent.

2.Objectives:

The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

Internship / case history taking,

Assisting in Psychological testing

Pre-Counseling in interactive manner & Discussion under professional's guidance

Joint research and publications

Resources sharing and exchange

3)This MOU shall be effective only after HPT Arts and RYK Science College, Nashik

and Manoday Mind care Clinic & Sunshine Counselling & Therapy Centre , Nasik

mutually agreed the terms & conditions.

4. General Terms Of MOU:

4a)Duration of MOU: This MOU shall be operational upon signing and will have initial duration of 25/06/2022 to 31/05/2023. All Activities conducted before this date within the vision/objects of this joint collaboration will be deemed to fall under this MOU.

4b)Coordination: In order to carry out and fulfil the aims of this MOU, each party to appoint an appropriate person(s) to represent its organization and to coordinate, implementation of activities. Full names, designations, Mobile nos, Email IDs of such persons will be incorporated in this MOU.

4c)Financial Implementations: There is no financial cost, liability in any manner whatsoever is involved in this MOU from both the parties. No right/title/interest in any manner will be created in the either of college properties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's and teacher's benefit at large.

4d) Confidentiality: Each party agrees that it shall not, at any time, after executing the activities of this MOU, will disclose any information without mutual consent.

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4e)Termination of MOU: This MOU shall terminate any time with 1(One) month prior written notice to each other by both the parties without assigning any reason.

4f) Extension of MOU: This MOU will be further extendible by 1(One) year, at the mutual consent of both parties on further mutually agreed terms.

4g)Communications: All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email followed by Registered Post A/D to the other party.

4h)Addendum: Any addendum to this MOU shall be in writing & signed by both the parties.

Herewith both the parties confirm that provisions in this MOU does not go against the rules and regulations of the Government policies.

Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU.

IN WITNESS WHEREOF, the parties hereto have executed this MOU on 25/06/2022



Coordinator Coordinator Manoday Mindorere Clinac & Sunshine Counselling & Therapy Centre, Nasik pellip HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 Signature, Name, Designation, Mobile NO., Signature, Name, Designation, Mobile NO., Email. Assistant Professorts 1900-Email. 9922241133 Joyashree 470@ gmail com Witnesses: Full Name, Signature, Date 1) Tanmay L Joshi T.L Joshi 2) Archana Gatkal (More \bigcirc 3) - Amil S. Bhart A.S.Bust 4) Mr. Peepuk.s. Bharson

Activity report of Group Counselling Session- 7th of April 2023

As a part of group counselling session exchanges of resources of their centre & the lecture was organised on 7th of April 23. The session was delivered by Consultant and Psychiatrist Dr. Hemant Sonanis, Manoday Mind Care Clinic and Sun-Shine Counselling & Therapy centre. Other dignitaries who graced the occasion and addressed the gathering include Dr. R. S. Kapure, HOD of Psychology department and other staff members of the department, HPT Arts and RYK Science college, Nashik.

Dr. Hemant Sonanis stated that mental health in the younger generation is deteriorating due to lack of communication. It is equally important to maintain our mental health in current times, and if needed there is nothing wrong in taking the help of Psychologist, Counsellor & Psychiatrist. With question answer session students' get clarification of their doubts. The session was attended by 65 students of PG & UG from the Department of Psychology.

Dellapre Co-ordinator Dr. R.S. Kapure HOD HPTArts & RYK Science College, Nashik

Co-ordinator Dr. Hemant Sonanis

Consultant and Psychiatrist Manoday Mind Care Clinic & Sun-Shine Counselling & Therapy centre, Nashik

Dr. Hemant A. Sonanis M.D. (PSY. Med.), DPM, M.B.B.S. NMC Reg No 2002/03/1500









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List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	Child Welfare Committee, Untwadi Road, Nashik	2022-23	1.	2023	Case History Taking, Interactive Session, Individual Counselling, Parental Counselling



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5



To,

Ref. No. 1104 2022 2-2

1911212022 Date .

The Chairperson / Members

Child welfare Committee, Nasik District.

Untawadi Road, Nasik.

Sub: Permission for Psychology students (UG& FG) to work as volunteers at the centre

despected sir,

As per the earlier communication between our faculty member & HOD Dept. Of Psychology Dr. R. S. Kapure and Advocate Millind Babar (charperson CWC, Nasik District), our college is happy to allow following students to work as volunteers at your centre. We all are aware about this activity which is purely voluntary and agree with its seriousness and confidentiality at student's part.

Following students have shown their interest in the work and their names are as :

1 Jiya Tendulkar

2.Shruti Chavan

3.Rasika Jadhao.

4 Samruddi Bankar (All SYBA)

5.JayeshPathal: 6. Rutika Mandore (MA.2.)

Our college appreciates your cooperation and support in this work.

Thanking you,

Blumr . HOD Dept of Psychology

HEAD DEUPAT IMEN: OF PSYCHOLOGY H.P.T. Ats& R.Y.K. SL. College, Nashik-S

morenpante STC Princip RINCIPAL H.P.T. Arts / R.Y.K. Sc. College Nasik - 5.

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Without Prejudice, Memorandum of Understanding (MGU) Between Gokhale Education Society's HPE Acts and RYK Science College, Nashik, Maharashtra- 422005 &

Child Welfare Committee, Nasik District Untawadi Road, Nasik

This document constitutes as Memorandum of Understanding (MOU) between

HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 and Child Welfare Committee, Nasik District Untawadi Road, Nasik

LAim of this MOU:

Knowledge exchange for students and practical skills training through workshops, seminars, and guest lectures.

Vide this MOU both the parties agree for the same with mutual consent.

2. Objectives:

The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

Internship / case history taking

Pre-Counseling in interactive manner & Discussion under professional's guidance

Joint research and publications

Resources sharing and exchange

3]This MOU shall be effective only after HPT Arts and RYK Science College, Nashik

and Child Welfare Committee, Nasik District Untawadi Road, Nasik mutually agreed the terms & conditions.

4. General Terms Of MOU:

4a)Duration of MOU: This MOU shall be operational upon signing and will have initial duration of 20/06/2022 to 31/05/2023 . All Activities conducted before this date within the vision/objects of this joint collaboration will be deemed to fall under this MOU.

4b)Coordination: In order to carry out and fulfil the aims of this MOU, each party to appoint an appropriate person(s) to represent its organization and to coordinate, implementation of activities. Full names, designations, Mobile nos, Email IDs of such persons will be incorporated in this MOU.

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4c)Financial Implementations: There is no financial cost, liability in any manner whatsoever is involved in this MOU from both the parties. No right/title/interest in any manner will be created in the either of college properties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's and teacher's benefit at large.

4d) Confidentiality: Each party agrees that it shall not, at any time, after executing the activities of this MOU, will disclose any information without mutual consent.

4e)Termination of MOU: This MOU shall terminate any time with 1(One) month prior written notice to each other by both the parties without assigning any reason.

4f) Extension of MOU: This MOU will be further extendible by 1(One) year, at the mutual consent of both parties on further mutually agreed terms.

4g)Communications: All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email followed by Registered Post A/D to the other party.

4h)Addendum: Any addendum to this MOU shall be in writing & signed by both the parties.

Herewith both the parties confirm that provisions in this MOU does not go against the rules and regulations of the Government policies.

Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU.

IN WITNESS WHEREOF, the parties hereto have executed this MOU on 20/06/2022



psihpie (Dr. R.S. Kapuse) (Dr. R.S. Kapuse) (J922241133 (najashsee470 Question Coordinator Child Welfare Committee, Nasik District HPT Arts and RYK Science College, Nashik, Untawadi Road, Nasik Maharashtra- 422005 Signature, Name, Designation, Mobile NO., Signature, Name, Designation, Mobile NO., Email. Email. Witnesses: Full Name, Signature, Date 2) Archana Gathal (Mose) 1) Tannag & Jeshi TUFIN 3) - Amin S. BIRT A. ... BANN 4) Rasika Rajgerza - Osilon

e un Carl

H.P.T. ARTS & R.Y.K.SCIENCE COLLEGE NASHIK-05

Pille Jive . Coordinotor

HILD

Members

Child Welfare Committee CHILD WELFARE COMMITTEE NASHIK

MEMBER

MENDER

MEMBER and a

	6	5	4	3	2	1	Sr. No	
	Rutika Mandore	Jiya Tendulkar	Samruddhi Bankar	Jayesh Pathak	Rasika Jadhao	Shruti Chavan	Name of volunteer	
Pallyc	21-12-22	12-12-22	12-12-22	12-12-22	12-12-22	12-12-22	Duration	
	28-02-23	03-05-23	30-06-23	28-02-23	20-03-23	19-04-23	OfInternship	Acade
FURRE CO MEMBER PRESIDENT	Case History Taking/ Interactive Session/ Individual Counseling	Case History Taking /Interactive Session/ Individual Counseling	Case History Taking /Interactive Session/ Individual Counseling/ Parental Counseling	Case History Taking/ Interactive Session/ Individual Counseling	Case History Taking /Interactive Session/ Individual Counseling/ Parental Counseling	Case History Taking/ Interactive Session/ Individual Counseling/ Parental Counseling	Activity Conducted	mic Year 2044-40

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CWC Internship Report Duration





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List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/ institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
1.	Krishna Dwaipayana Gurukula, Gopal Seva Sangh's Krishnadvaipayan Gurukul, Dondaicha	2022-23	1.	2022	Research Methodology Workshop



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

Page 1 of 2

Memorandum of Understanding (MOU)

Between

Gokhale Education Society's H.P.T. Arts and R.Y.K. Science College, Nashik, Maharashtra- 422005

&

Krishna Dwaipayana Gurukula,

C/O Shree Gopalkrishna Seva Sangh

Reg. No. Maha./12/2017 Shree Gopalkrishna Mandir, Gopalpura, Dondaicha, Shindkheda, Dhule 425408

1. Aim of this MOU:

Knowledge exchange for students and staff training through workshops, seminars, and guest lectures, visits to laboratory, student's projects.

2. Objectives:

The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

- 1. Internship/ projects
- 2. Exposure visits,
- 3. Knowledge sharing,
- 4. Research activities,

5. Training program,

6. Propagation of IKS and conservation of indigenous knowledge

This MOU shall be effective only after HPT Arts and RYK Science College, Nashik 422005 and Krishna Dwaipayana Gurukula, C/O Shree Gopalkrishna Seva Sangh, Reg. No. Maha./12/2017 Shree Gopalkrishna Mandir, Gopalpura, Dondaicha, Shindkheda, Dhule. 425408 **mutually agree the terms & conditions.**

3. General Terms of MOU:

The terms and conditions are as follows:

- 1. This MoU shall be operational upon signing and will have initial duration of 1 (One) year that is from 18/06/2022 to 17/06/2023. All activities conducted during these dates within the vision /objects of joint collaboration will be deemed to fall under this MOU.
- 2. In order to carry out and fulfil the aims of this MOU, each party to appoint an appropriate person(s) to represent its organisation and to coordinate, implementation of activities, Full names, designations, mobile numbers, Email Ids of each persons will be incorporated in this MOU.
- 3. Company shall be responsible only for student's on job training. Any other factor shall be at student's own responsibility
- 4. Student's candidature as a trainee may stand cancelled if observed that he / she fails to maintain / abide to company rules & regulations for trainees or on exhibiting any misbehaviour during training hours.
- 5. Company shall not bear any transport facility to the trainees.
- 6. Company may pay any stipend to the trainees during this training program
- 7. There is no financial cost; liability in any manner whatsoever is involved in this MOU from both the parties. No right/title/interest in any manner will be created in the either of college properties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's and teacher's benefit at large.
- 8. Each party agrees that it shall not, at any time, after executing the activities of this MOU, will disclose any information without mutual consent.
- 9. All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email followed by Registered Post A/D to the other party.

- 10. In order to promote Academic and Research co-operation between the students and faculty of both the institutes, it is agreed that the areas like Academic activities, Placements, Joint collaborative research activities and Students practical set of co-operation should be developed.
- 11. It is agreed between two institutes will participate / undertake the above mentioned activities with prior information from the Head of both institutes.
- 12. Other common activities that could help to enhance co-operation, such as joint seminars, field visits, awareness programme, exhibitions etc.
- 13. This MOU will be further extendible by 1(One) year, at the mutual consent of both parties on further mutually agreed terms.
- 14. The term of this agreement may be amended at any time by mutual written consent of the parties.
- 15. Either company or Institution may terminate this agreement by giving prior notice to other institution any time in the study period if desired. In case of termination, the academic programme of the students currently enrolled should not be affected.
- 16. Any addendum to this MOU shall be in writing & signed by both the parties.
- 17. Herewith both the parties confirm that a provision in this MOU does not go against the rules and regulations of the Government policies.

Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU. Hence the memorandum of understanding is signed.

Vide this MOU both the parties agree for the same with mutual consent.

IN WITNESS WHEREOF, the parties here to have executed this MOU on 18/06/2022

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Dr.M.D.Deshpande	Ms. Ruchita Panchbhai
I/C Principal, Nasik - 5.	Secretory.
HPT Arts and RYK Science College, Nashik,	Krishna Dwaipayana Gurukula
Maharashtra- 422005	C/o Shree Gopalkrishna Seva Sangh
Contact No. 9881059272	Reg. No. Maha/12/2017 Shree Gonalkrishna
prinhptryknsk@rediffmail.com	Mandir Gonalnura Dondaicha Shindkheda
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	gurukul krishnadwainayana01@gmail.com
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De Lange W Harris	शी गोपालकृष्ण मटोर, गोपालपुरा,
Dr. Leena V. Hunnargikar	Dr. Tanmay Bhole दोंडाइचा,ता.शिदखेडा, जि.धुळ-४२४ ००
Department of Sanskrit,	Coordinator, नोंदणी ग्रमांक-महा/१२/२०१७
HPT Arts and RYK Science College, Nashik,	Krishna Dwaipayana Gurukula,
Maharashtra- 422005	Shree Gopalkrishna Seva Sangh, Dhule. 425408
hunnargikarlv@hptrykcollege.com 9423062979	9730166419 <u>bholetanmay8@gmail.com</u>
	Reg. No. Maha./12/2017 Shree Gopalkrishna
	Mandir, Gopalpura, Dondarcha, Skindkheda, or राघ
	Dhule. 425408 M. 0982242319700 मंदीर, गोपालपुरा,
	gurukul.krishnadwainayana01@gmail.com-82400
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RESEARCH METHODOLODY WORKSHOP

ORGANIZED BY

GOPAL SEVA SANGH'S KRISHNADVAIPAYAN GURUKUL, DONDAICHA DEPARTMENT OF SANSKRIT, H.P.T ARTS AND R.Y.K. SCIENCE COLLEGE, NASIK (23rd SEPTEMBER to 25th SEPTEMBER 2022)

On Friday, 23rd September 2022, a Research Methodology workshop was organized by Gopal Seva Sangh's Krishnadvaipayan Gurukul, Dondaicha and Department of Sanskrit, H.P.T Arts and R.Y.K. Science College, Nasik. Total 20 students have attended this workshop. Ms. Ruchita P. Panchbhai, Secretary, Krishnadvaipayan Gurukul was Resource Person and she conducted this workshop.

On the first day, she talked about research aptitude and how to use this approach while conducting research. What is research and how it is important, was discussed by her. Various methods also were discussed by her. On the second day of the workshop, she talked about presentation techniques. She discussed some research presentations. On the third day, the workshop was conducted online mode because it was Sunday. Some research articles were read out by students as well as teachers and those were discussed with the Resource Person, Ms. Panchbhai.

Mr. Nikhil D. Jagtap and Dr. Leena V. Hunnargikar, both Staff members in the department were involved in these discussions. At the end of the workshop, Leena Hunnargikar heartily thanked Ms. Ruchita Panchbahi for her valuable guidance to all of us. The workshop was successfully concluded after gratitude ceremony.



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

Research Methodology. Ms. Ruchita P. Panchbhai Director, Koushna Draipayang Crunikedam. 23rd September 2022 (23rd to 25th sept. 2022) Sr. No Name. Sign. (mtact Dhanashree Name Pate DiRate 9373287866. 1 7588464983 Wandain. Neha Join 2 Smrut Havekage 3. smruti 7058067306 Swaranjali R. Ranade 4. 9579688166 5. Divya Y. Bagu 9766832669 6. Parisa . V. Hajare 9145694466. 7. Shirom N. Ner - Discharter 9423971224 hinou Athalica g. lohak Akhilsh D. Divit 8. 9322842585. g. 7083225186 10 Jayesh J. Joshi Delu' 8983003851 11. Neha D. Kothawade Northausse 9421411743 12. Sayali chandrakant mule chil 8668960809 13. Aastha Gujarathi 7588137788 14. Mansi Kale Calens 9552998593 15. Destipande Rugued Ravindra 16 Aniruddha A Jarve GANDAG 9922843784 7350580705 17. Telas G Shiral 9579359409, tyoz. 8. Shinow Ner 9423971224 19. Malpure Madherra Nim 8459804366 eyn

24th September 2022 .

1) Mansi Kale 2) Sayali Mule 3] Neha kothawade 4) Jayesh Joshi 5) Smruti Harkare 6) Shinom Nes 7) Neha Jain 8) Tanmay Jayart Bhole 9) Dhanashure Nitin Pate 10) Bhavana Gosari 11) Mugdha Jeurkar 12) Malpure Madhura

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List of the Activities conducted under MoU

Sr. no.	Name of the collaborating agency/ institution / industry/ corporate house with whom the MOU/ collaboration/ linkage is made, with contact details	Year of signing MoU / collaboration /linkage	Sr. no.	Year of activity	List of Activities/ Collaboration
	Sahyadri Shikshan Mandals, Mahant Jamanadas Maharaj, Arts Commerce and Science College, Karanjali	2022-27	1.	2023	Workshop on Millets



PRINCIPAL HPT (ARTS) & RYK (SC.) COLLEGE NASHIK -5

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Without Prejudice, Memorandum of Understanding (MOU) Between Gokhale Education Society's HPT Arts and RYK Science College, Nashik, Maharashtra- 422005

Sahyadri Shikshan Mandal's,

Mahant Jamanadas Maharaj, Arts Commerce and Science College, Karanjali

This document constitutes as Memorandum of Understanding(MOU) between HPT Arts and RYK Science College, Nashik, Maharashtra- 422005 and Mahant Jamanadas Maharaj, Arts Commerce and Science College, Karanjali, Maharashtra-422208 on13th April2022

I.Aim of this MOU:

E

Knowledge exchange for students and staff training through workshops, seminars, and guest lectures. Vide this MOU both the parties agree for the same with mutual consent.

2.Objective:

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The objective of this MOU is to express the willingness of both parties to engage in an effort to promote collaborative activities in the following areas:

Internship

F.

Industrial visits

Knowledge sharing



Joint research and publications Resources sharing and exchange

3)This MOU shall be effective only after HPT Arts and RYK Science College, Nashik and Mahant Jamanadas Mahami Arts Courses and Science College, Karania

Mahant Jamanadas Maharaj, Arts Commerce and Science College, Karanjali, mutually agreed the terms & conditions.

4. General Terms Of MOU:

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4a)Duration of MOU: This MOU shall be operational upon signing and will have initial duration of 5(Five) years i.e. on or before 31stMarch2027. All Activities conducted before this date within the vision/objects of this joint collaboration will be deemed to fall under this MOU.

4b)*Coordination:* In order to carry out and fulfil the aims of this MOU, each party to appoint an appropriate person(s) to represent its organization and to coordinate, implementation of activities. Full names, designations, Mobile nos, Email IDs of such persons will be incorporated in this MOU.

4c)Financial Implementations: There is no financial cost, liability in any manner whatsoeveris involved in this MOU fromboth the parties. No right/title/interest in any manner will be created in the either of college properties and, or, otherwise by anybody. There will be no cost, charge by HPT Arts and RYK Science College, Nashik- 422005 as the aforesaid objective is being carried out in the form of voluntary activity for the sake of student's and teacher's benefit at large.

4d)Confidentiality: Each party agrees that it shall not, at any time, after executing the activities of this MOU, will disclose any information without mutual consent.

4e)Termination of MOU: This MOU shall terminate any time with 1(One) month prior written notice to each other by both the parties without assigning any reason.

4f) Extension of MOU: This MOU will be further extendible by 1(One) year, at the mutual consent of both parties on further mutually agreed terms.

4g)*Communications:* All communications by both the parties shall be done by Email, ordinary post. Only in case of termination of MOU communication will be done by Email followed by Registered Post A/D to the other party.

4h)Addendum: Any addendum to this MOU shall be in writing & signed by both the parties.

Herewith both the parties confirm that provisions in this MOU does not go against the rules and regulations of the Government policies.

Nashil

Aforesaid all terms & conditions also apply to any subsequent Addendum to this MOU.

IN WITNESS WUKREOF, the parties hereto have executed this MOU on 31st March 2027 Dr.V.N.Suryavanshi Principal PRINCIPAL H.P.T. Arts / R.Y.K. Sc. College Mahant Jamanadas Maharaj, Arts For HPT ANShift RYK Science College, Commerce And Science College. Nashik, Maharashira, 422005 Karanjali, Maharashtra-422208. NASHIK 27 2113 05 Coordinator Coordinator Runni Dr.Avinash S. Jondhale Prof. (Dr.) Sanjay G. Auti Mahant Jamanadas Maharaj, Arts HPT Arts and RYK Science College, Nashik, Commerce and Science College, Karanjali, Maharashtra- 422005 Maharashtra -422208. Mobile NO.- +91-9423080468 Mobile No:-+91-9422144082 Email. hptbot@gmail.com Email:-avinashjondhale51@gmail.com Witnesses: Full Name, Signature, Date 2) Dr. chavan Smith 1) Dr. M.S. Udaya G. Basarkan leerd-g -Petraven 4) Dr. D. T. Tayde 3) Jrs. K.V.C. Gasavi. (P.OSUN)





















* Preparation, Demonstration and Processing Millets Recipes in Workshop:-









