The Best Practice of Department of Botany

Herbarium

About Herbarium: The word Herbarium was derived from 'Herbar' means plant specimens and 'arium' means an artificial place. In 1700 Tournefort first time used word Herbarium as an equivalent to Hortus siccus. Hortus siccus is Latin word it means dry garden. In 1951 Lawrence define it as "the arrangement of specimens in the sequence of an accepted classification and the specimens are available for reference or other scientific studies". In simple words herbarium (plural herbaria) is a storehouse of dried plant specimens. These dried specimens was mounted on appropriate sheets and arranged according to accepted system of classification and kept in pigeonholes of steel cup-boards.

Objective:

- Increase knowledge of plant diversity of region.
- Assist others conducting research on plants.
- To bring together in a relatively permanent form of specimens for comparative morphological or phylogenetic studies.
- To provide material for specific research as in plant anatomy, palynology and ethnobotany and also for molecular research.
- Develop identification tools to meet specific needs
- Increase interest in the region's flora by a conscious effort at outreach

Type of Herbarium: Local Academic herbarium.

Role of Herbarium in Teaching and Research: It is one of the teaching aid in botany for degree and post graduate students. By using herbarium specimens students are able to identify local plants. Many specimens, which the teacher would like to show to his students, may not be available fresh at the time of giving the course. In such situations, available specimens in the herbarium serve the purpose.

Besides teaching taxonomic research work based on herbarium. They also provide information of medicinal plants and ethno-botanical data. New species, new records, medicinal plants like information are also available from herbarium.

Beneficiaries: UG and PG students, Pharmacy students from taluka and farmers.

Importance of Herbarium: Balasaheb Jadhav college herbarium is local academic herbarium. There are approximately 5000+ voucher specimens that documented Junnar floristic diversity, Bhimashankar floristic diversity and Pune district medicinal plant diversity for past 20 years. Holotype, Isotype , Neotype are present in voucher specimens.

Student micro-project during 2019-2020 as a part of Environmental studies

Sr. No.	Name of Student	Project Title
1	Maniyar Arbina Ashpak	Enumeration of Arboreal flora of College Campus
2	Bamnane Divya Khandu Waghole Sayli Kerbhau	Plant diversity of Dawalmalik, Rajuri
3	Jadhav Payal Dnyaneshwar	Plant diversity of Bori Bk
4	Ghadge Vaibhavi Ankush	Botanical stydy of weed identification and control Guide
5	Chikane Vaishnavi Rohidas Padir Ashwini Arjun	Study of Medicinal plants around the Wadgaon Anand Village
6	Sonawane Shraddha Ramdas	Botanical study for various plant species of Family Leguminosae(Fabaceae)
7	Musale Kavita Balasaheb Shelke Prajakta Nivruiti Pawar Kavita Sukhdev	Botanical Garden of Ale College Campus

Publication Outcomes from Herbarium

A. New plants described: Two

i) New Species - *Ledebouria junnarensis* S.S. Rahangdale & S.R. Rahangdale *nom.nov*. (Asparagaceae) with the highest known chromosomes 2n=70 & IUCN status. (2016)

ii) New variety -*Ceropegia mahabalei* Hemadri et. Ansari var. *hemlatae* S.S. Rahangdale & S.R. Rahangdale (2012)

B. New Generic records to the State of Maharashtra: Two

i) *Botrychium*Swartz. (Botrychiaceae) Pteridophyte (2011)

ii) *Soliva* Ruiz & Pavon (Asteraceae) (2016)

C. New species records to the State of Maharashtra: Three

i)*Anoda cristata* (L.) Schltdl. (Malvaceae) (2013)

ii) *Garnotia courtallensis*(Arn. and Nees.) Thw. (Poaceae) (2009)

iii) *Cucumis dipsaceus*Ehrenb. ex Spach. (Cucurbitaceae) (2016)

D. Rediscoveries: One

i) *Tillaea schimperi*(C.A. Meyer) M.G. Gilbert, H. Ohba & K.T. Fu. (Crassulaceae). (2010)

E. Awards:

- Awarded with **Prof.S.N. Dixit Gold Medal Award** for the best poster paper in the Pharmacy presented Teacher/Scientists presented at the Annual Conference of the Indian Botanical society of the year 2019 at Calicut University, Calicut during 6-8 Nov. 2019, for the paper entitled, **Comparative anatomical study of *Gymnema* species from Maharshtra.**
- Awarded with **Mukta Sanman 2018** by News 18 Lokmat for outsanding work in Science.
- Awarded with **Phule Dampatya Sanman** 2018 by Mahatma Phule Vichar Manch, Junnar for outstanding work in education and research.
- Awarded with **Samaj Prerana Puraskar** 2018 by Late Ramchandji Babel Charitable trust, for setting a benchmark of Social work and research.

F. Details of Publications based on herbarium are enlisted below –

1. **Rahangdale S. S.,** S. R. Rahangdale and V. S. Ghate 2010.Rediscovery of *Tillaea schimperi* (C.A. Meyer) M.G. Gilbert, H. Ohba and K.T. Fu. from Maharashtra.*The Indian Forester*,136(6):851-853, June 2010.**H index: 4.**ISSN:0019-4816.
2. Rahangdale S. R. and **S. S. Rahangdale** 2011. *Botrychium* Swartz.: A new genus record from Maharashtra State.*The Indian Forester*, 137(12): 1462-1463.**H index: 4.**ISSN:0019-4816.
3. **Rahangdale S. S.** and S. R. Rahangdale 2012. *Variety Novae* of *Ceropegia mahabalei* Hemadri et. Ansari.*The Indian Forester*, 138(2):202-203. **H index: 4.**ISSN:0019-4816.
4. Mahendra Bhise, **S. S. Rahangdale**, S. R. Rahangdale and S. V. Kambhar 2013.Floristic Study of Kalbhairavanatha Sacred Grove, Terungan, Ambegaon Taluka, Pune. *Research & Reviews: Journal of Botany*, 2(1):17-24.ISSN:2320-0189.
5. Rahangdale S. R**.** and **S. S. Rahangdale**. 2013. *Anoda cristata* (L.) Schltdl. (Malvaceae): A New Record for Maharashtra.*The Indian Forester*, 139(9):853-854. **H index: 4.**ISSN:0019-4816.
6. **Rahangdale S. S.** and S. R. Rahangdale 2014. Plant species composition on two rock outcrops from the Northern Western Ghats, Maharashtra, India.*Journal of Threatened Taxa*, 6(4):5593-5612. **NAAS index: 4.72** http://dx.doi.org/10.11609/jott.o3616.5593-612ISSN:0974-7907(online), 0974-7893(Print).
7. Rahangdale S. R. and **S. S. Rahangdale**. 2014. Potential wild edible plant resources from Maharashtra: Future prospects for their conservation and improvement.*Life Sciences Leaflets*, 57:73-85. **Impact Factor: 1.22; Index Copernicus: 15.8, NAAS index: 2.69.ISSN 2277-4297(Print) 0976–1098(Online).**
8. Bhise, M.R., **S.S. Rahangdale**&S.R. Rahangdale 2015. Effect of leaf harvesting on reproduction and natural populations of Indian Wild Banana *Ensete superbum*(Roxb.) Cheesman (Zingiberales: Musaceae).*Journal of Threatened Taxa* 7(5): 7181–7185; http://dx.doi.org/10.11609/jott.o4004.7181-5**NAAS index: 4.72** ISSN: 0974-7907(online), 0974-7893 (Print).
9. **Rahangdale S. S**. and S. R. Rahangdale. 2016. Rediscovery, Systematics and proposed Red List status of *Ledebouria junnarensis* S. S. Rahangdale & S. R. Rahangdale *nom. nov.* (Asparagaceae) – an endemic species from the Western Ghats, Maharashtra,

India.*Journal of Threatened Taxa* 8(2): 8421 – 8433. (26 February 2016). http://dx.doi.org/10.11609/jott.2167.8.2.8421-8433**NAAS index: 4.72** ISSN:0974-7907(online), 0974-7893(Print).

10. **Rahangdale S. S.** and S. R. Rahangdale. 2016. *Cucumis dipsaceus* Ehrenb. ex Spach.: A new record for Maharashtra state, India.*Life Sciences Leaflets* 75: 58 – 62. **Impact Factor: 1.22; Index Copernicus: 15.8, NAAS index: 2.69. ISSN 2277-4297(Print) 0976–1098(Online).** 1st May 2016.
11. **Rahangdale S. S.** and S. R. Rahangdale. 2016.Eco-friendly synthesis of Silver nanoparticles from *Mundulea sericea* (Willd.) A. Chev.: Its antifungal activity.*In* The *Proceeding of National seminar on Nanotechnology: Environmental, Economic, Social & Health perspectives*. AWC Otur. 23 January 2016. Pp. 13-17. **ISBN:987-93-5158-581-7.**
12. Bhuskute S. M., S. R. Rahangdale**, S. S.Rahangdale** and M. G. Awaley. 2016. *Soliva* Ruiz & Pavon: A new generic record to the flora of Maharashtra.*Life Sciences Leaflets* 78: 79 – 84. **Impact Factor: 1.22; Index Copernicus: 15.8, NAAS index: 2.69. ISSN 2277-4297(Print) 0976–1098(Online).** 1stAugust 2016.
13. **Rahangdale S.S**. & S.R. Rahangdale**.** 2017.Floristic diversity of Bhimashankar Wildlife Sanctuary, northern Western Ghats, Maharashtra, India. *J. of Threatened Taxa* 9(8): 10493–10527; http://doi.org/10.11609/jott.3074.9.8.10493-10527. **NAAS index: 4.72** ISSN: 0974-7907(online), 0974-7893(Print).
14. **RahangdaleS. S.,** S. R. Rahangdale and A. N. Khupat 2018. Assessment of therapeutic usage of medicinal plants of Pune district, Maharashtra. *Life Sciences Leaflets* 98: 1 – 25. **Impact Factor: 1.22; Index Copernicus: 78.3, NAAS index: 3.98. SJIF: 4.8, Cosmos IF: 4.366. ISSN 2277-4297(Print), 0976–1098(Online).** 1stApril 2018.
15. **Rahangdale S.S.,** S. R. Rahangdale and A.N. Khupat 2019. A novel potential plant: *Crepidium versicolor* against wound microbes. *Indian Research Journal of Pharmacy and Science* 6(2): 1839-1844. http://doi.org/10.21276/irjps.2019.6.2.2 ISSN(O):2349-5332.
16. **Rahangdale S.S** 2019**.** Phytochemical Analysis of *Gymnema* Complex from Maharashtra, Journal of Drug Delivery and Therapeutics. 2019; 9(2-s):316-318 **http://dx.doi.org/10.22270/jddt.v9i2-s.2709**

17. Rahangdale S.S. & **S.R. Rahangdale** 2020. Resolving taxonomic problems in the genus *Ceropegia* L. (Apocynaceae: Asclepiadoideae) with vegetative micromorphology. *Journal of Threatened Taxa*12(9): 16064–16076; http://doi.org/10.11609/jott.5004.12.9.16064-16076. **NAAS index: 5.0Scopus Impact factor 0.44. UGC-Care Category 'A' journal.** ISSN:0974-7907(online), 0974-7893(Print). https://threatenedtaxa.org/index.php/JoTT/article/view/5004, https://threatenedtaxa.org/index.php/JoTT/article/view/5004/6843
18. Rahangdale S. S. and **S. R. Rahangdale**. 2020. Fluorescence and FTIR markers for different taxa of *Gymnema* drug complex from Maharashtra. ***Plant Science Today,*** 7(3): 333-340. July 2020. ISSN 2348-1900. Available at: http://horizonepublishing.com/journals/index.php/PST/article/view/731. Date accessed: 07 July 2020. doi: https://doi.org/10.14719/pst.2020.7.3.731. http://horizonepublishing.com/journals/index.php/PST/article/view/731/424.
19. **Rahangdale S S**, Rahangdale S R. Wetlands and diversity of angiosperm macrophytes in wetlands of Pune district, in Maharashtra, India. Plant Science Today. 2021;8(1):16–23. https://doi.org/10.14719/pst.2021.8.1.849

Books Published:

1. **Rahangdale S. R.** and S. S. Rahangdale, 2018. **Biodiversity of Durgawadi Plateaus** Department of Forests, Government of Maharashtra, Mumbai. Pp. 114 with >400 Photographs of Plants, Animals and Habitats. ISBN:978-93-5016-432-7

Consultancy: Plant identification

Regional pharmacy college students, botany students, research students and famers get advantage of this service.

Maintenance of Herbarium:

Students from Botany as well as "Earn and Learn scheme" trained for herbarium maintenance.

Future plan: Develop digital herbarium.

Photographs:

Crud Drug sample bank: Drug collected from Tribals

View of Herbarium cup-board

Mukta Sanman 2018 by News 18 Lokmat for outsanding work in Science.

Book Publication program: Biodiversity of Durgawadi Plateaus

Identification and Naming of College campus plants by the students

Herbarium Curator

Dr. Savita Rahangdale

(Fellow of IAAT and IUCN member)