संदर्भ सं० / Ref. No. SH/Admn/2296/23 दिनांक / Dated 03.03.2023

ORDER

Subject: Financial Sanction of the Minor Research Project MRP/2022-2023/0003 entitled **"Impact of Elevated Temperature on the Seed Germination of Medicinal plants** (*Catharanthus roseus* and *Trigonella foenum-graecum)*" under the supervision of Dr Kiran Bamel, Department of Botany, Shivaji College, New Delhi 110 027 and Dr Seema Talwar, Department of Botany, Shivaji College, New Delhi 110 027.

1. Sanction of Shivaji College is hereby accorded to the grant for above mentioned project at a total cost of **INR 30,000/-** (Rupees Thirty Thousand Only) for a duration of 12 months.

The items of expenditure for which the total allocation of **INR 30,000/-** has been approved are given below:

Sl. No.	Budget Head	Amount (in INR)
1.	Equipment's/Consumables	10,000.00
2.	Travel/field visit	5,000.00
3.	Stationery/Printing	5,000.00
4.	Contingency	10,000.00
	Total	**30,000.00**

2. The sanction has been issued to with the approval of the competent authority vide Diary No. P/5927/23 dated 24.02.2023.

3. Sanction of grant is subject to the conditions as detailed in the Guidelines of Minor Research Project under intramural scheme of the Shivaji College available at www.shivajicollege.ac.in

4. Proper stock register should be maintained by the Principal Investigators.

5. The file number MRP/2022-2023/0003 should be mentioned in all communications arising from the above project.

राजा गार्डन, रिंग रोड, नई दिल्ली - 110027 / Raja Garden, Ring Road, New Delhi - 110027 • ऑफिस/Off.: 011-25116644
टेलीफैक्स / Telefax: 011-25155551 • ई–मेल/E-mail: shivajicollege.ac@gmail.com • वेब/Website: www.shivajicollege.ac.in

संदर्भ सं० / Ref. No. SH/Admn/2296/23 दिनांक / Dated 03.03.2023

6. Utilization Certificate (UC) and Statement of Expenditure (SE) dually verified by PI's, Administrative Office (Accounts) and Principal of the college must be submitted after 12 months from the date of start of the project.

7. Midterm report on the work done must be submitted by the Principal Investigator after the completion of six months from the date of start of the project.

8. The project completion report should be submitted after the completion of the project, which will be evaluated by the eminent expert in the field and the students trained in the project should present the outcome of the project work in annual festival "SRIJAN" to be organised by the College Research & Innovation Cell.

9. The Principal Investigators must acknowledge the support provided to them in all publications, patents and any other output emanating out of the project funded by the Shivaji College.

10. General Finance Rules (GFR) to be followed for procurements.

शिव कुमार सहदेव

Prof. (Dr) Shiv Kumar Sahdev
Officiating Principal

Copy forwarded for information and necessary action to:

1. Dr Kiran Bamel (Principal Investigator)
2. Dr Seema Talwar (Principal Investigator)
3. Convener, College Research & Innovation Cell, Shivaji College
4. Administrative Officer (Accounts)
5. Administrative Officer (Admin.)

राजा गार्डन, रिंग रोड, नई दिल्ली - 110027 / Raja Garden, Ring Road, New Delhi - 110027 • ऑफिस/Off.: 011-25116644
टेलीफैक्स / Telefax: 011-25155551 • ई–मेल/E-mail: shivajicollege.ac@gmail.com • वेब/Website: www.shivajicollege.ac.in


GPS Map Camera
New Delhi, Delhi, India
GC-30, Shivaji Enclave, Tagore Garden Extension, New Delhi, Delhi, 110027, India
Lat 28.655802°
Long 77.120598°
05/12/23 12:05 PM GMT +05:30
Google


GPS Map Camera
New Delhi, Delhi, India
GC-30, Shivaji Enclave, Tagore Garden Extension, New Delhi, Delhi, 110027, India
Lat 28.6558°
Long 77.120616°
05/12/23 12:07 PM GMT +05:30
Google


GPS Map Camera
New Delhi, Delhi, India
GC-30, Shivaji Enclave, Tagore Garden Extension, New Delhi, Delhi, 110027, India
Lat 28.655802°
Long 77.120601°
05/12/23 11:58 AM GMT +05:30
Google

Summary of the Project:

Plant seed germination is a crucial stage in the life cycle of plants, and the successful establishment of plants largely depends on successful germination. The process of seed germination starts with imbibition of the water and ends with the initiation of radicle, followed by plumule. The performance of seeds in terms of germination and seedling growth are controlled by several environmental factors (temperature, salinity, light, and soil moisture) among them, temperature plays a very crucial role for achieving higher yield of the crops.

Catharanthus roseus produces nearly 130 alkaloids mainly ajmalcine, vinceine, resperine, vincristine, vinblastine and raubasin. Vincristine and vinblastine are used for the treatment of various types of cancer such as Hodgkin's disease, breast cancer, skin cancer and lymphoblastic leukemia. Major anticancer drugs isolated from *C. roseus* are Oncovin and Velban marketed world widely in millions of tons. It has high medicinal values which need to be explored extensively and need to be conserved using techniques like micropropagation.

Each individual species has an optimum temperature, below and above these temperatures, germination cannot occur. It has been observed in some species that temperature above the thermal optimum can an inhibition in germination and irreversible damage, whereas in some other species high temperature can also enhance the percent seed germination as high temperature can activate the chemical pathways leading to seed germination. Therefore, the present study has been undertaken to study the effect of temperature on the seed germination of *Catharanthus roseus* and *Trigonella foenum-graecum* and various parameters associated with it along with the biochemical parameter.

ABSTRACT BOOK

Annual National Conference
on

ADVANCES IN PLANT BIOLOGY (APB 2024):

Innovations and Strategies for Sustainable Agricultural Productivity for Viksit Bharat @2047

Saturday, February 10th, 2024
Venue: Pt. Madan Mohan Malaviya Auditorium,
Hansraj College, University of Delhi

Organised by:
Department of Botany, Hansraj College
in collaboration with
Mahatma Hansraj Malaviya Mission Teacher Training Centre
(MH-MMTTC)

Impact of Nano Particles in Combating the High Temperature Stress in Crops

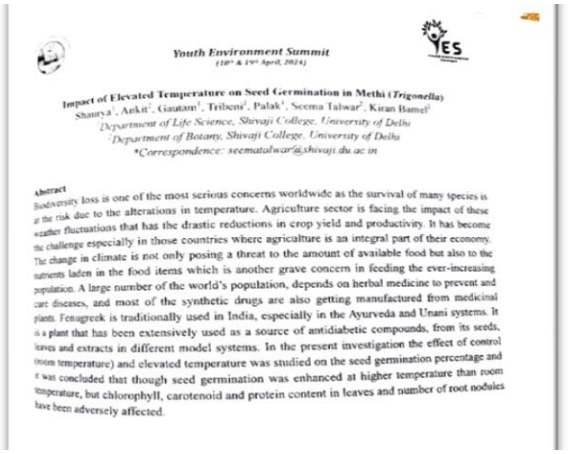
[1]Gautam, [2]Tribeni, [1]Shaurya, [2]Ankit, [1]Palak, [2]Seema Talwar* and [2]Kiran Bamel
[1]Department of Life Science, Shivaji College, University of Delhi
[2]Department Of Botany, Shivaji College, University of Delhi

*Email: seematalwar@shivaji.du.ac.in

Indian agricultural system is under tremendous pressure due to the climate change. The anthropogenic interferences have accelerated the earth's surface temperature, causing abiotic stress to the plants which results in the loss of plant growth and productivity. The various types of abiotic stresses like salinity, high or low temperature, flooding or drought are known to curb the growth and productivity of plants (Hayat et al., 2023). Many promising techniques have been adopted to overcome these negative effects of climate change, i.e., the practising of tolerant genotypes, application of different plant growth regulators, and the use of organic fertilizers. These adverse effects of climate change have been seen to be counteracted by the use of these nanoparticles making the crops more resilient and stress tolerant. Nanotechnology promises to increase crop yield by improving plant tolerance mechanisms under abiotic stress conditions. Selenium nanoparticles reduced the impact of heat stress in sorghum (Djanaguiraman *et al. 2018)*. The application of biological selenium NPs at 100 µg/mL increased plant productivity by improving plant growth, photosynthetic rate, and gas exchange at elevated temperatures in *Triticum aestivum* L. (El-Saadony et al., 2021). Similarly, the application of ZnO and TiO_2 also improved membrane stability and antioxidant defense mechanism in root and shoot parameters in wheat (Thakur et al., 2021). The ability of nano-ZnO NPs to regulate osmotic potential and reduction in thylakoid damage by activating antioxidant defense, ensured higher plant production.In mungbean, also the application of nano-ZnO NPs at elevated temperature increased chlorophyll activity, gas exchange parameters, and enzymatic balance, which resulted in an increase in pod number, size, and total grain yield (Kareem et al. 2022).

The nano particles help the plant to evade the stress at biochemical, molecular and physiological levels (Al-Khayri et al., 2023). Therefore, this study investigates the application of nanoparticles in seeking sustainable agriculture and lessening the adverseeffects of abiotic stress.

Oral Presentation at Youth Environment Summit in Guru Gobind Singh Indraprastha University (17-18th April, 2024)



Youth Environment Summit
(18th & 19th April, 2024)

Impact of Elevated Temperature on Seed Germination in Methi (*Trigonella*)

Shaurya[1], Ankit[2], Gautam[1], Tribeni[2], Palak[1], Seema Talwar[2], Kiran Bamel[1]
[1]Department of Life Science, Shivaji College, University of Delhi
[2]Department of Botany, Shivaji College, University of Delhi
*Correspondence: seematalwar@shivaji.du.ac.in

Abstract

Biodiversity loss is one of the most serious concerns worldwide as the survival of many species is at the risk due to the alterations in temperature. Agriculture sector is facing the impact of these weather fluctuations that has the drastic reductions in crop yield and productivity. It has become the challenge especially in those countries where agriculture is an integral part of their economy. The change in climate is not only posing a threat to the amount of available food but also to the nutrients laden in the food items which is another grave concern in feeding the ever-increasing population. A large number of the world's population, depends on herbal medicine to prevent and cure diseases, and most of the synthetic drugs are also getting manufactured from medicinal plants. Fenugreek is traditionally used in India, especially in the Ayurveda and Unani systems. It is a plant that has been extensively used as a source of antidiabetic compounds, from its seeds, leaves and extracts in different model systems. In the present investigation the effect of control (room temperature) and elevated temperature was studied on the seed germination percentage and it was concluded that though seed germination was enhanced at higher temperature than room temperature, but chlorophyll, carotenoid and protein content in leaves and number of root nodules have been adversely affected.


Impact of Elevated Temperature on Seed Germination in Methi(Trigonella)

STUDENTS INVOLVED IN THE PROJECT (NAME, DEPARTMENT, EMAIL ID AND PHONE NUMBER)

NAME OF THE STUDENTS	DEPARTMENT	EMAIL	PHONE NO.
Ankit	Botany(H) IV sem	ankittiwary88598@gmail.com	9650216468
Gautam S.	Life Sc. IV sem	gautastiko1612@gmail.com	9445773735
Palak	Life Sc. IV sem	palak.krishnaz@gmail.com	9821454881
Shaurya	Life Sc. IV sem	shaurya54@gmail.com	7976057667
Tribeni	Botany (H) IV sem	sharmatribeni2021@gmail.com	9085652712