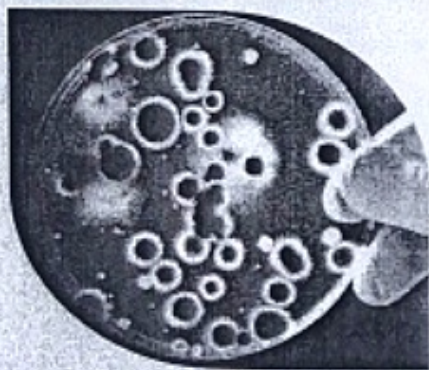
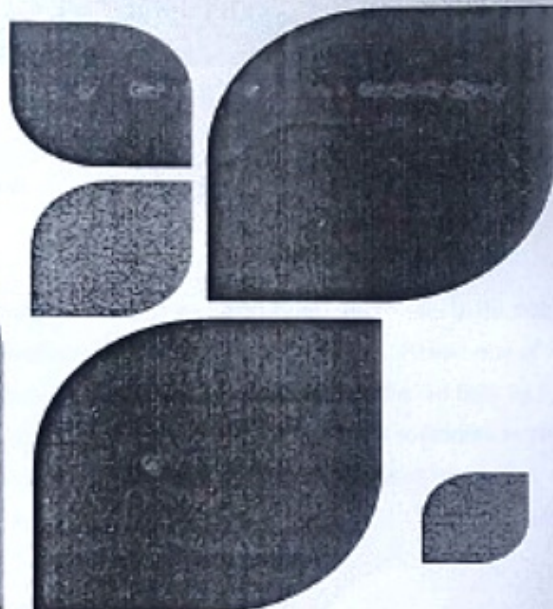
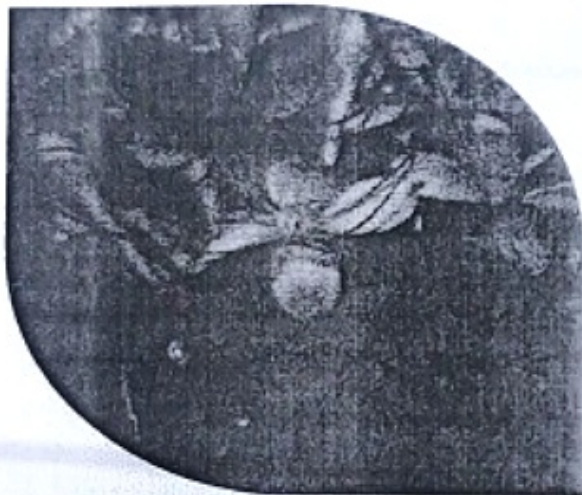




सत्यमेव जयते

Department of Biotechnology
Ministry of Science & Technology
Government of India



2018

LIFE SCIENCES PROTOCOL MANUAL

DBT Star College Scheme

Compiled by

Dr. P. Hemalatha Reddy, Principal, SVC

Dr. Suman Govil, Senior Advisor, DBT

Suggested Reading(s)

- i. Jain, V. K. (2000). *Fundamentals of plant physiology*. S. Chand limited. ISBN 9788121904629. <https://books.google.co.in/books?id=rDlenQEACAAJ>
- ii. Parashar, A.N. & Bhatia, K. N. (1985). *Plant physiology*. Trueman Book Company ISBN 9780878938667. <https://books.google.co.in/books?id=frGDRAAACAAJ>
- iii. Kochhar, S. L. & Gural, S. K. (2011). *Comprehensive practical plant physiology*. Laxmi Publications. ISBN-10 0230324460.
- iv. Taiz, L. and Zeiger, E. (2010). *Plant physiology*. Sinauer Associates. ISBN 9780878938667. <https://books.google.co.in/books?id=frGDRAAACAAJ>

Contributor(s)

- Dr. Basistha Kalita, Assistant Professor, Department of Botany, Kaliabor College.

Reviewer(s)

- Dr. Sunita Shailajan, Ramnarain Ruia College, Mumbai.

Editor(s)

- Dr. Neeti Mehla, Department of Botany, Sri Venkateswara College, New Delhi. Email: neetihaka@yahoo.com
- Dr. Aditi Kothari- Chhajjer, Department of Botany, Sri Venkateswara College, New Delhi. Email: aditikothe@gmail.com

Source

Title picture: <http://study.com>

LIST OF CONTRIBUTORS

BOTANY

Name of the Contributor	Designation	Department	College	State
Dr. Aditi Kothari,	Assistant Professor	Botany	Sri Venkateswara College, University of Delhi	Delhi
Mr. Alok Gude	Assistant Professor	Botany	St. Xavier's College(Autonomous)	Mumbai
Dr. Arvind Kumar	Assistant Professor	Botany	Doaba College	Punjab
Dr. Basistha Kalita	Assistant Professor	Botany	Kalabor College	Assam
Dr. Chiranjeev Bezbaruah	Assistant Professor	Botany	Kalabor College	Assam
Dr. Jitumita Baruah	Assistant Professor	Botany	Kalabor College	Assam
Dr. Madhu Bala Tyagi	Professor (Coordinator)	Botany	Mahila Maha Vidyalaya, Banaras Hindu University	Uttar Pradesh
Dr. Neeti Mehla	Assistant Professor	Botany	Sri Venkateswara College, University of Delhi	Delhi
Dr. Prabhjyoti	Assistant Professor	Botany	Doaba College	Punjab

ZOOLOGY

Name of the Contributor	Designation	Department	College	State
Dr. Geetha Unnikrishnan	Associate Professor & Head	Zoology	Birla College of Arts, Science and Commerce	Tamilnadu
Dr. Hemalatha Ramchandran	Associate Professor & Head	Life Sciences	Sophia College for Women	Mumbai
Dr. Madhu Bala Tyagi	Professor(Coordinator)	Botany	Mahila Maha Vidyalaya, Banaras Hindu University	Uttar Pradesh
Dr. Navgeet	Assistant Professor	Biotechnology	Doaba College	Punjab
Dr. Radha Chaube	Assistant Professor	Zoology	Mahila Maha Vidyalaya, Banaras Hindu University	Uttar Pradesh
Dr. Rajiv Khosla	Assistant Professor & Head	Biotechnology	Doaba College	Punjab
Dr. Sasikumar Menon	Assistant Professor	Pharma Analytical Sciences	Ramnarain Ruia College	Mumbai
Dr. Swam Lata	Professor	Zoology	Mahila Maha Vidyalaya, Banaras Hindu University	Uttar Pradesh
Dr. Sunita Shailajan	Associate Professor & Head	Botany	Ramnarain Ruia College	Mumbai
Dr. Vijayeta Joshi	Assistant Professor	Biotechnology	Doaba College	Punjab

MICROBIOLOGY

Name of the Contributor	Designation	Department	College	State
Dr. Heena Jariyal	Associate Professor	Biotechnology	Doaba College	Punjab
Dr. Mohit Sharma	Assistant Professor	Biotechnology	Doaba College	Punjab
Dr. Kakoli Biswas	Assistant Professor & Head	Biotechnology	DAV College	Chandigarh
Dr. Madhumita Banerjee	Assistant Professor	Botany	Ramjas College, University of Delhi	Delhi
Dr. Nandita Narayansamy	Assistant Professor	Biochemistry	Sri Venkateswara College, University of Delhi	Delhi
Dr. Nikhant Faldu	Assistant Professor	Microbiology	Shree M. & N. Virani Science College	Gujarat
Dr. Rajiv Khosla	Assistant Professor & Head	Biotechnology	Doaba College	Punjab
Dr. Rini Roy	Assistant Professor & Head	Microbiology	Maulana Azad College	Kolkata
Dr. Samudra Prosad Bank	Assistant Professor	Microbiology	Maulana Azad College	Kolkata
Dr. Soma Pal Saha	Assistant Professor & Head	Microbiology	Darjeeling Government College	West Bengal
Dr. Shalini Sehgal	Associate Professor	Food Technology	Bhaskaracharya College of Applied Sciences, University of Delhi	Delhi
Dr. Suman Sharma	Associate Professor	Botany	Ramjas College, University of Delhi	Delhi
Dr. Uma Chaudhry	Associate Professor	Biomedical Science	Bhaskaracharya College of Applied Sciences, University of Delhi	Delhi
Dr. D. Upadhaya	Associate Professor	Botany	Budge Budge College	West Bengal
Dr. Vandana Malhotra	Associate Professor	Biochemistry	Sri Venkateswara College, University of Delhi	Delhi

LIFE SCIENCES PROTOCOL MANUAL

January, 2018

Copyright © Department of Biotechnology
Ministry of Science & Technology
Government of India

ISBN: 978-93-5300-545-0 (paperback)

Compiled

Dr. P. Hemalatha Reddy, Principal, Sri Venkateswara College
Chairperson, DBT Project "Generate E-SOPs & Lab Manual"

Dr. Suman Govil, Senior Advisor, DBT

Reviewed

Professor Suman Kundu

Dr. Sunita Shailajan

Dr. Sasikumar Menon

Dr. Shivani Patel

Dr. Shalini Sehgal

Published

Department of Biotechnology
Block 2, 6th Floor, CGO Complex
Lodhi Road, New Delhi 110003
www.dbtindia.nic.in

Graphic Design

Institute of Communication Design Pvt. Ltd. (www.iocd.in)

Project Support Staff

Dr. Meeta Bhardwaj

Ms. Jyoti

Cover Photo Credits (In order of appearance, from top to bottom)

Picture 1: <https://cdn-images-1.medium.com> (Antibody- virus interaction)

Picture 2: Dr. Sunita Shailajan, Ramnarain Ruia College, Mumbai (*Saraca asoca*)

Picture 3: <http://www.rtc.rs> (Double helix structure of DNA)

Picture 4: <https://www.thestreet.com> (Mould growth on petri plate)

To Study The Sugar Content in Different Banana Variety Found in Kaliabor Sub-Division

Rupam Mandal, Marfat Ali, Hadi Alom, Chiranjeeb Bezbaruah & Basistha Kalita*

INTRODUCTION :

Banana is a common fruit, easily found in various locality with various names. The fruit belongs to the family Musaceae and it contains low saturated fats, cholesterol. It is also a good source of dietary fiber, vitamin - C, potassium, magnesium, iron and a very good source of vitamin B6. A large amount of calories come from its sugar, which is very essential for human nutrition and economic importance too.

The topic "To Study The Sugar Content in Different Banana Variety Found in Kaliabor Sub-Division" is selected for research project that was not be taken and worked in Kaliabor Sub-Division so far. On the way the topic is selected and expose.

Area of Study :

The study area Kaliabor Sub-Division of Assam, India is situated at a distance of 48 K. M. East of Nagaon town. The area contain vast source of biodiversity. Various tree, fruit plant, shrub, herb and various animals are found in the study area. The

area contain suitable ph5.5 - 6.5 of soil, which is suitable for the growth of banana plant.

The various banana variety is collected from different villages (Kuwaritol, Jayantipur, Santipur, Ujari, Jagoni, Borbhogia, Borbhokoti, Jakhalaba, Shoolong, Salna, Silghat and Bamuni) of Kaliabor Sub-Division. The variety of banana of different village has different importance.

AIMS and OBJECTIVES

Realizing the need of investigation following aims and objectives are given below

- To find out different kind of banana variety found in Kaliabor sub-division.
- To find out the sugar content in different variety of banana by Somogyi's method.
- To find out the economic importance of different variety of banana by the local people.

Materials and Method

A. Laboratory analysis :

Experiment : To study the sugar content in different varieties of banana found in Kaliabor sub-division.

a) Materials :

1) Somogyi's reagent of 1 L. contains

- 28 g.m. of anhydrous sodium carbonate
- 40 g.m. sodium potassium tartrate
- 8 g.m. of cupric sulphate (Cuprous sulphate)
- 180 g.m. of sodium anhydrous sulphate or $\text{Na}_2\text{SO}_4 \cdot 4\text{H}_2\text{O}$ of 408 g
- 100 ml. of 1N NaOH.

UDDIPON

A collection of Students' Research Project Summaries



Editor : Dr. Basistha Kalita
Chief Editor : Dr. Hiranya Kumar Chaliha

UDDIPON

(A collection Student's Research Project Summaries)



Editorial Board

Chief Editor

Dr. Hiranya Kumar Chaliha

Editor

Dr. Basistha Kalita

Members

Mr. Chiranjeev Bezbaruah, Dr. Anupam Kumar Medhi

Mr. Gosai Chan Das, Mr. Parag Dahal

Dr. Pranjit Kumar Bhuyan



Published by

Research Cell and Star College Scheme of Kaliabor College
Kuwaritol, Nagaon, Assam

March, 2019

Copy Right © Kaliabor College

Cover Design : Dr. Basistha Kalita

ISBN : 978-81-923253-4-7

Printed : **Sanskriti Press**, Hatbor, 98543 69441

Price : 300.00



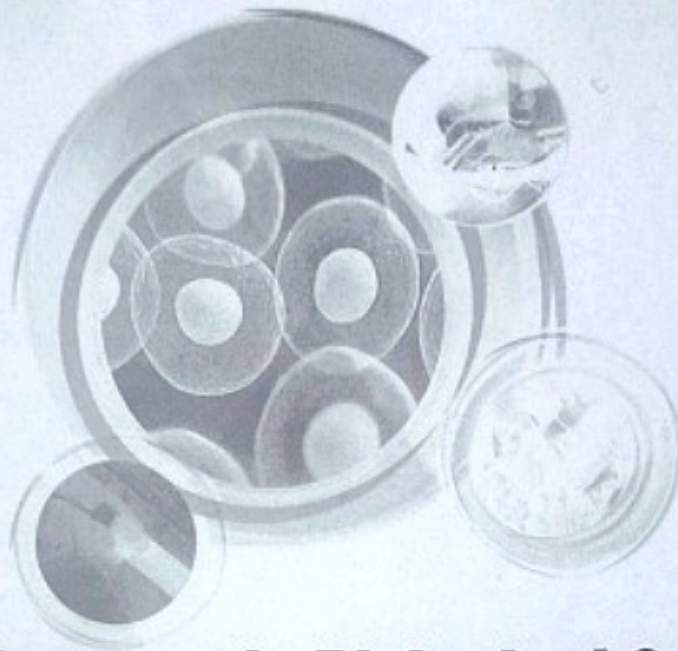
STUDIES ON DIFFERENT BANANA VARIETY OF KALIABOR SUB-DIVISION

**Bitu Ali Hazarika, Dishanka Borah, Ruhan Biswas,
Pankhi Kakati, Rinju Bharali, Basistha Kalita &
Chiranjeeb Bezbaruah**

ABSTRACT

Banana is a very important fruit for India. It is the common name for herbaceous plant of the genus *Musa*. Banana is the oldest cultivated plant in India. The aim of this study was to identify and analyze different variety of banana present in Kaliabor sub-division and its locality. For the present study it was found 35 varieties of banana in Kaliabor sub-division, out of which 33 species are edible and 2 are ornamental plants. The type of fruit is berry. The total sugar content of Amrit sagar banana, Bhim banana, Chenichampa banana, Hoindha banana, Hunda banana, Jahaji banana, Kachulopa banana, Kach banana, Malbhog banana, Monohor banana are tested in Kaliabor College Biological science laboratory and found that *Musa chinensis* (Jahaji banana) possess 24.9% total sugar content higher than other variety.

Key Word : Banana, Kaliabor sub-division, Sugar content.



Recent Advances in Biological Science : Biodiversity and Human Welfare

Proceedings of the National Seminar on
"Recent Advances in Biological Science: Biodiversity and Human Welfare"
(November 18th-19th, 2022)

Organized by :

Department of Zoology, Darrang College, Tezpur, Assam

Financed by Assam Science Technology and Environment Council (ASTEC)

Science Technology and Climate Change Department, Govt. of Assam

Editors:

**Dr. Chittaranjan Baruah
Dr. Rabindra Hazarika**

RECENT ADVANCES IN BIOLOGICAL SCIENCES : BIODIVERSITY & HUMAN WELFARE : A collection of Research articles on Biological Sciences as the Proceedings of National Seminar on "Recent Advances in Biological Sciences: Biodiversity & Human Welfare" (November 18-19, 2022) organized by Department of Zoology, Darrang College, Tezpur, Assam in collaboration with Zoological Society of Assam (ZSA) and IQAC-Darrang College, Tezpur

Edited by Dr. Chittaranjan Baruah & Dr. Rabindra Hazarika and published by Global Net Publication, (An Imprint of Asian Humanities Press), 3rd Floor, 4736/23 Ansari Road, Daryaganj, New Delhi-110002 in collaboration with "Darrang College Publishing House".
Financed by Assam Science Technology and Environmental Council (ASTEC), Science Technology and Climate Change Department, Govt. of Assam

First Impression : 2023

Publisher : Global Net Publication
(An Imprint of Asian Humanities Press)
3rd Floor, 4736/23 Ansari Road, Daryaganj, New Delhi-110002
Contact No : 80113-48501, 75770-73317
Tel. No. : +9101143074469

&
Darrang College Publishing House
Darrang College, Tezpur-784001, Assam

©: Editor

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior permission of the publisher, in writing.

This book is sold subject to the condition that it shall not, by way of trade or otherwise be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

Online Contact : globalnetpublication@gmail.com

ISBN : 978-81-960385-4-0

Printed at : Das offset, Assam, India

Price: ₹ 600/-

Advisors

Dr. Dol
Prof. D
Prof. J
Prof. N
Dr. O
Philipp
Prof. J
Dr. Ut
Dr. Ak

President

Dr. Pa

Editor(s)

Dr. Ch
Dr. Ra

Member (s)

Binita
Abhijit
Dr. Na
Juli Ba
Dr. Mc
Dr. Sar
Ritu S
Parishn

Chapter 13 :

STUDIES ON VEGETATIVE PROPAGATION RATE OF SOME GENERA OF ORCHIDS FROM NAGAON DISTRICT OF ASSAM

Basistha Kalita

Department of Botany, Kaliabor College, Kuwaritol-782137,
Nagaon, Assam, India

*Corresponding authors' e-mail: kalitabasistha69@gmail.com

ABSTRACT

Orchids are considered as one of the nature's wonders because of its peculiar morphological structure, extra ordinary colours and fragrance. Since time immemorial Orchids have been occupying an important place in belief, rituals, ethno medicine and ornamentation in different ethnic groups of the world. At present due to different reasons many Orchid species are at verge of extinction. Urgent conservation of orchid species is the need of the hour. Practice of vegetative propagation in mass may be the convenient measure to conserve Orchid species. Keeping this view in mind a study on rate of vegetative propagation rate among some genus of Orchids in Nagaon district was carried out.

Among the Orchids genera found in Nagaon district *Aerides*, *Cymbidium*, *Dendrobium*, and *Rhyncostylis* exhibit higher propagation rate. Vegetative propagation rate of Orchids of Nagaon district ranges from 0.8 ± 0.76 to 6.46 ± 1.8 . In case of *Aerides* the propagation rates are 1.8 ± 0.86 (*Aerides multiflora*) and 2.4 ± 0.98 (*Aerides odorata*). *Cymbidium* showed the propagation rate 5.2 ± 1.52 . The propagation rate in the species of *Dendrobium* ranges from 1.46 ± 0.99 to 6.46 ± 1.8 . The propagation rate of *Rhyncostylis* counted was 2.13 ± 0.83 .

Keyword : Propagation, Conservation, Orchids.

INTRODUCTION

Orchids are considered as pride of nature. It occupies the hearts of naturalists and Botanists by its eye catching colour combinations, variety of sizes, peculiar morphological structure and sweet fragrance. Since ancient time, Orchids are being loved and nurtured by different ethnic groups of the world. In the belief and rituals of many ethnic groups Orchids play a distinctive role. Greeks paid their respect to tubers of Orchids as a symbol of virility. Since the time of Confucius, the Chinese considered many Orchids as the "The plant of the

King's fragrance on their head during springtime. *Dendrobium grandiflorum* occupy an important edible item produce a sizeable plants right from by Sushruta and medicinal properties prescribing for have been reported presently as to inhabitants in Orchids hold a utilization of which to mention that in India (Handa

Orchids are considered primarily about 20,000 species in Antarctica. The to the Sub Antarctic hot, humid low Indian species are of Gujarat. In the 700 Orchid species of Assam. However the jungles of Assam district of Assam of Assam (Kalita

The World is that, this is going analysis shows that have 50% or more Peninsular region Himalayas (86 species regions, these were scientific conservation North East in particular medicinal, horticultural



ORCHIDS of Nagaon

**Dr. Basistha Kalita
Chiranjeev Bezbaruah**

Rapilionathetares (Roxb)



Orchids *of Nagaon*

Disclaimer : Views facts and analysis expressed by the author are of his own and do not necessarily reflect of the publisher.

Author : Dr. Basistha Kalita, Chiranjeev Bezbaruah

Photograph & Pencil Sketch : Dr. Basistha Kalita,

Design and Layout : **Chandan Borah**

Price : 500.00

ISBN : **978-81-923253-0-9**

Printed at **Sanskriti Press**, Hatbor, Kaliabor,

jayanta.kaliabor@gmail.com (Cont. : 98543 69441)

Cover Page : Photo, Orchid, *Papilionanthe teres*

Copy Right : Author.