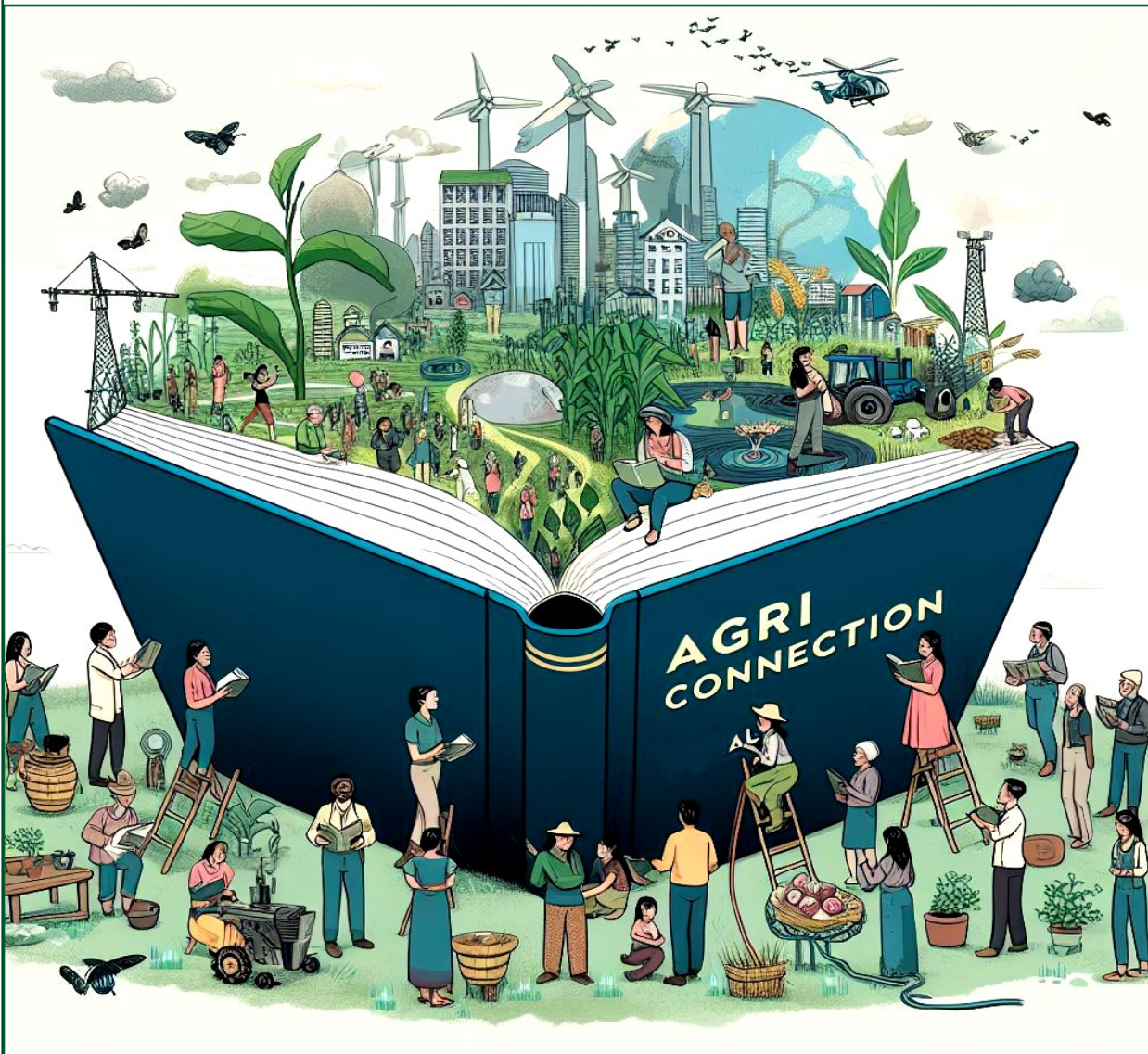


Quarterly Newsletter

AGRI-CONNECTION

March 2024 | Volume 9, Issue 1



6 NAPA Conference

14 NAPA Election

19 Nepal News

31 Phytoacoustics

35 Social Mobilization

39 कृषि कविता

PROSPERITY THROUGH AGRICULTURAL TRANSFORMATION

Message from the President



Dr. Pradeep Wagle
NAPA President

Dear NAPA members and everyone,

As I write my final presidential message for the Agri-Connection (AC) newsletter, I reflect on my involvement with NAPA since its establishment in 2015. I was proud to be part of the founding working committee that chartered the organization, and I've remained actively engaged ever since. Over the past four Executive Committees, I've had the honor of serving as Joint Secretary (2016-2018), General Secretary (2018-2020), Vice President (2020-2022), and President (2022-2024). Through the unwavering support of our esteemed NAPA members and the tireless efforts of dedicated committees, we have diligently pursued the advancement of NAPA's prominence, focusing on several key areas.

To create a valuable resource for our members, we launched a *database of NAPA-affiliated agricultural professionals* and their expertise. However, to truly maximize its potential, we need our members' help to expand it. We launched a hugely successful first phase of our *Subject-matter Roundtable*, fostering meaningful interaction and networking between students, scientists, and professionals of all career stages. To keep this momentum going, we need to continue this program. We recently launched the *New Faculty Spotlight* program and regularly organized various trainings, workshops, and symposia for networking, capacity building, and professional development of our members. Bimonthly webinars and panel discussions addressed contemporary agricultural and environmental issues. We are expanding collaborations with other organizations in the Americas, Nepal, and beyond to achieve our common goals. Our dedicated editorial board is making significant progress on the GJAAS publication. We tried to strengthen NAPA's resources by seeking extramural funding and endowment funds. NAPA is a sub-awardee (\$15,000) for a United States Department of Agriculture (USDA) funded project on "*Generating and Sustaining the Next Generation of the Food, Agriculture, Natural Resources, and Human Sciences Workforce through International Experiential Learning, Outreach, and Engagement*", led by Kentucky State University. We have received a total pledge of ~\$110,000 for the endowment fund as of now. We need tremendous support from our members and beyond to make a real difference.

We are excited to release the concluding edition (**Volume 9, Issue 1**) of AC from the 2022-2024 Executive Committee. This issue features insightful agricultural articles and research summaries, and as always showcases the amazing work of our committees and members. A huge thank you to our members and supporters! Your invaluable contributions are the very foundation of our newsletter and the key to our achievements.

Our sub-committees have been busy organizing events over the past quarter. The Student Coordination Committee (SCC) hosted a *New Faculty Spotlight* event on January 14, 2024 for networking and professional development, featuring four exciting new faculty members. The Webinar Committee (WC) organized the 38th Webinar on "*Ecosociocentrism: The Earth First Paradigm – A Journey from Anthropocene to Symbiocene*" on February 18, 2024. The 39th webinar on "*Building Resilient Communities: Addressing Seismic Vulnerability and Youth Outmigration in Nepal*" has been scheduled for April 7, 2024. The Research and Capacity Building Committee (RCBC) is compiling final reports and planning for presentations from Research Mini-Grant awardees at the upcoming conference. The RCBC hosted "*Writing Interdisciplinary Research Proposals: Practical Insights*" led by a renowned Professor Dr. Xiangming Xiao from the University of Oklahoma on March 10, 2024. Behind the scenes, dedicated members of each sub-committee are making incredible contributions in their areas of focus.

Message ...

Please plan to attend the NAPA 4th Biennial International Scientific Conference, which will occur in a hybrid format, both virtually and in person, from May 24-26, 2024 in Baltimore (Maritime Conference Center), Maryland, USA. With 217 abstracts submitted for oral and poster presentations from nine countries, the conference promises a diverse range of scientific perspectives. In addition, several keynote and invited speakers will be sharing their expertise. The registration portal and hotel reservation are open at <https://napaamericas.org/NAPA-conference-2024>. The Conference Organizing Committee (COC) and sub-committees are working tirelessly to ensure a successful conference. A big thank you to the Nepali business community in Maryland! Their generous donations are fueling the NAPA Conference. We are incredibly grateful for their support in this important event.

NAPA is growing strong! We have welcomed 26 new members this quarter alone, and we are thrilled to have them! This expanding community creates a vibrant platform for collaboration. I would like to thank everyone for their continued solidarity and support to make NAPA grow internationally.

A huge thank you to the AC Editorial Board, led by Dr. Sushil Thapa! Their dedication to excellence ensures that every issue of Agri-Connection is top-notch. Please submit your contributions to newsletter@napaamericas.org and help us keep Agri-Connection as a valuable resource for the community!

Wishing everyone a very Happy New Year 2081 BS!

Association of Nepalese Agricultural Professionals of Americas (NAPA)



Executive Committee

President

Dr. Pradeep Wagle

Vice President

Dr. Ramjee P. Ghimire

General Secretary

Dr. Nityananda Khanal

Joint Secretary

Dr. Sushil Thapa

Treasurer

Dr. Bishwo Adhikari

Members

Dr. Buddhi Gyawali

Dr. Dev Poudel

Mr. Dol P. Dhakal

Dr. Kripa Dhakal

Dr. Pramod Pokhrel

Dr. Uma Karki

Dr. Megha N. Parajulee,
Immediate Past President

<https://www.napaamericas.org/>

Editorial

We are thrilled to announce the release of Volume 9 of Agri-Connection. The soaring height of Agri-Connection epitomizes the boundless altruism and unwavering dedication of all contributors, who have generously contributed their creativity, time, energy, and efforts into this endeavor. As a result, beyond being merely a newsletter, Agri-Connection stands as a symbol of our community's commitment, collaboration, and capability. Thank you, everyone!

Currently, NAPA team is deeply immersed in the meticulous planning and execution of the 4th Biennial International Scientific Conference, slated to take place from May 24-26, 2024, in the vibrant city of Baltimore, Maryland with a theme of *Climate-Smart and Innovative Agriculture*. This conference aims to bring together experts, policymakers, researchers, growers, and students to share knowledge, best practices, and innovative solutions for fostering climate-resilient agriculture. Kindly mark your calendar and join us in this remarkable undertaking. Your presence is eagerly anticipated, and we would be delighted to have you contribute to the success of this momentous occasion.

This edition of Agri-Connection highlights the conference activities and presents an overview of keynote/invited speakers. Articles covering diverse topics such as direct seeded rice, phytoacoustics in plant life, social mobilization, and biological pest control are featured. Additionally, we provide a comprehensive overview of NAPA's impactful initiatives and achievements in organizational development, capacity building, networking, and philanthropy.

Happy Nepali New Year 2081 BS to you all!

AGRI-CONNECTION Editorial Board



Dr. Sanjok Poudel
Editor



Dr. Rajan Shrestha
Guest Editor



Dr. Sushil Thapa
Editor-in-chief



Mr. Tribikram Dahal
Nepal Correspondence



Mr. Bidur Paneru
Guest Editor

TABLE OF CONTENTS

<u>Title</u>	<u>Page</u>
Message from the President	2
Editorial	4
Save the Date for NAPA Conference - 2024	6
Conference Organizing Committee	7
Conference Highlights	8
Hotel and Registration Information	9
Keynote Speaker	10
Invited Speakers	11
Conference Sponsors	12
Conference Activities	13
NAPA Election - 2024	14
Webinar Series - 38 and 39	16
Training/Seminar	17
Call for Articles	18
Nepal News	19
Photograph in Action	21
Appeal for Contribution to Endowment Fund	22
Membership Update	23
Appeal to Join/Renew Membership	24
Membership Type and Fee	25
NAPA Committees	26
KidsZone	27
Article: Transforming Rice Farming through Direct Seeded ...	28
Article: Phytoacoustics and its Vital Role in Plant Life	31
Article: Ladybird Beetle: A Promising Biological Control ...	33
Article: Social Mobilization: A Valuable Approach ...	35
कृषि कविता: कृषक र कर्मको फल	39

© NAPA

Publisher



Association of Nepalese Agricultural Professionals of Americas (NAPA)

Email : napa@napaamericas.org

Website: <https://napaamericas.org/>



Please

SAVE
THE
DATE

NAPA PROUDLY ANNOUNCES

4TH BIENNIAL
INTERNATIONAL
SCIENTIFIC

Conference

MAY 24-26, 2024

Memorial Day Weekend

www.napaamericas.org

REGISTER HERE



**MARITIME
CONFERENCE
CENTER**

*692 Maritime Blvd,
Linthicum Heights,
MD 21090*

Stay
**TUNED FOR
MORE
UPDATES**

Conference Theme: Climate-Smart and Innovative Agriculture



NAPA 2024

4th BIENNIAL INTERNATIONAL SCIENTIFIC CONFERENCE (HYBRID)

MAY 24-26, 2024 | BALTIMORE, MARYLAND, USA

Conference Organizing Committee

Lila B. Karki	Chair
Pradeep Wagle	Co-chair, Fundraising Chair
Megha N. Parajulee	Co-chair, Program Planning
Prem Bhandari	Chair, Scientific Sub-Committee
Bharat Pokhrel	Chair, Student Writing Contest
Bishwo Adhikari	Chair, Finance/Treasury
Omkar Joshi	Chair, Student Rapid Fire
Dev Paudel	Chair, IT Sub-committee
Bhim Chaulagain	Secretary
Sanjok Poudel	Co-secretary
Mahesh Jaishi	Member
Krishna Timsina	Member
Bishnu Upreti	Member
Kiran Ojha	Member
Gahendra Gurung	Member
Kemika Bhandari	Member
Shital Poudyal	Member
Basu Dev S. Pokhrel	Member

Local Arrangement Committee

Basu Dev S. Pokhrel	Chair
Keshav Sharma	Secretary
Janak Dhakal	Secretary
Bishwo Adhikari	Chair, Walk and Run Sub-committee
Kemika Bhandari	Chair, Golf Event
Prem Bhandari	Member
Chakra Budhathoki	Member
Lila Karki	Member
Megha N. Parajulee	Member
Pradeep Wagle	Member
Ramesh Khanal	Member
Bal Krishna Regmi	Member
Rudra Gurung	Member
Lekh Nath Paudel	Member
Agni Nepal	Member
Ananda Tiwari	Member
Sahil Ojha	Member
Dipendra Gurung	Member
Gopi Upreti	Member
Ramesh Pokhrel	Member

Outreach, Advertising/Marketing

Santosh Dhakal	Lead
Bipin Neupane	Member
Keshav Sharma	Member
Kemika Bhandari	Member
Sahil Ojha	Member

Fundraising Sub-committee

Pradeep Wagle	Chair
Bishwo Adhikari	Member
Chakra Budhathoki	Member

Agri-poem

Krishna Poudel	Coordinator
Govinda Baral	Co-coordinator
Indira Paudel	Member
Dhananjaya Dhakal	Member
Bharat M. Shrestha	Member

Cultural Program

Anamol Khanal	Coordinator
Akanksha Hada	Coordinator
Bhuvan Shrestha	Member
Shital Poudyal	Member
Raju Thada Magar	Member

Logistics

Kripa Dhakal	Lead
--------------	------

Table Tennis

Janak Dhakal	Lead
--------------	------



FOR MORE INFORMATION
CLICK OR SCAN
THE QR CODE

Conference Theme: Climate-Smart and Innovative Agriculture



NAPA 2024

4th BIENNIAL INTERNATIONAL
SCIENTIFIC CONFERENCE (HYBRID)

MAY 24-26, 2024 | BALTIMORE, MARYLAND, USA

Climate-Smart & Innovative Agriculture

Conference Highlights

- *Panel Discussions on Various Topics*
- *Student Writing Contest*
- *Student Rapid Fire Presentations*
- *Student Oral and Poster Competition*
- *Professional Development Workshops*
- *Professional Oral and Poster Presentations*
- *Distinguished Achievement Award in Agriculture*
- *Outstanding Students Recognition*
- *Special Session on Gender Role in Climate-Smart Agriculture and Global Food Security*
- *Research Mini-Grantees Presentations*
- *Agri-Poem Recitation*
- *Fun Filled Cultural Night*
- *Door Prizes*

[REGISTER HERE](#)




**Maritime
Conference
Center**

692 Maritime Blvd,
Linthicum Heights,
MD 21090

Conference Theme: Climate-Smart and Innovative Agriculture



NAPA 2024

4th BIENNIAL INTERNATIONAL SCIENTIFIC CONFERENCE (HYBRID)

MAY 24-26, 2024 | BALTIMORE, MARYLAND, USA



MARITIME

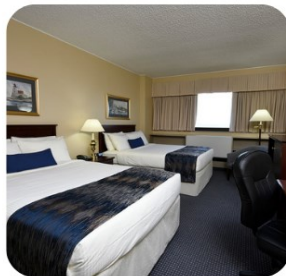
CONFERENCE CENTER

692 Maritime Blvd, Linthicum Heights, MD 21090

RATE PER ROOM PER NIGHT:

- Single Occupancy: **\$165.00**
- Double Occupancy: **\$210.00**

Additional persons in the room are charged **\$45 each/night**; Maximum of 4 people



ROOM RATES INCLUDE:

- **Breakfast and Dinner**
- Complimentary Wi-Fi, parking, and shuttle service to/from BWI Airport/Amtrak Station

HOTEL RESERVATION:

- Call Hotel Reservations at **(866) 900-3517** and identify yourself with NAPA Conference 2024
- Book reservations online on the website:
<https://gettaroom.b4checkin.com/mccbwil#main>
(Use group code: 6625)



- Group discounted rates available for reservation from 5/22 to 5/28/24
- Book before Friday, May 03, 2024 to get group discounted rates

Free cancellations 72 hours before check-in

Conference Theme: Climate-Smart and Innovative Agriculture

TOPIC

Addressing Global Food and Nutritional Security Challenges and Opportunities: An 1890 Land-Grant Universities Perspective

Key Note
SPEAKER



DR. MOSES T. KAIRO

Dean: School of Agricultural and Natural Sciences
Director: Land Grant Programs and 1890 Universities Center of Excellence for Global Food Security and Defense
University of Maryland Eastern Shore



Maritime Conference Center

692 Maritime Blvd,
Linthicum Heights, MD
21090



www.napaamericas.org

NAPA
4TH BIENNIAL
INTERNATIONAL SCIENTIFIC CONFERENCE
MAY 24-26, 2024

Invited
SPEAKER



DR. HARRY BHANDARI

Delegate
Health and Government Operations Committee
The Maryland House of Delegates
(Lower house of the legislature of the U.S. state of Maryland)
Chair of Maryland Legislative Asian-American Pacific Islanders (AAPI) Caucus



Maritime Conference Center

692 Maritime Blvd, Linthicum Heights, MD 21090



www.napaamericas.org

TOPIC

Resource Conservation and Agricultural Strategies for Farmers to Meet Environmental Goals

Invited
SPEAKER



MR. HANS SCHMIDT

Assistant Secretary
Resource Conservation
Maryland Department of Agriculture



Maritime Conference Center

692 Maritime Blvd, Linthicum Heights, MD 21090



www.napaamericas.org



Conference Theme: Climate-Smart and Innovative Agriculture



NAPA 2024

4th BIENNIAL INTERNATIONAL SCIENTIFIC CONFERENCE (HYBRID)

MAY 24-26, 2024 | BALTIMORE, MARYLAND, USA

INVITED SPEAKERS



DR. PUNEET SRIVASTAVA

Topic: Climate Forecasts and Projections for Climate-Smart Agriculture and Water Resources Management



DR. STEPHAN J. GOETZ

Topic: The 2022 Census of Agriculture: Updates and Emerging Trends for the Northeast U.S.



DR. RICHARD C. RHODES III (RICK)

Topic: Can Agriculture Save the World?



DR. SRINIVASA RAO MENTREDDY

Topic: Low-temperature Atmospheric Pressure Plasma: A Green Technology for Improving Crop Productivity, Food Safety and Agricultural Sustainability



DR. CHRIS B. WATKINS

Topic: Postharvest technologies to reduce losses of fruits and vegetables – understanding the differences between hype and reality!



DR. TERESA E. LESLIE

Topic: What Funding Opportunities are Available to Farmers and Ag Businesses?



MR. PAUL GOERINGER



MS. MARGARET (MEGAN) TODD

Common Topic: Awareness and understanding of the laws in agricultural production, processing, and marketing

Conference Theme: Climate-Smart and Innovative Agriculture



NAPA 2024

4th BIENNIAL INTERNATIONAL SCIENTIFIC CONFERENCE (HYBRID)

MAY 24-26, 2024 | BALTIMORE, MARYLAND, USA

Thanks to Our Gold Sponsors



LI-COR Corporate, Lincoln, NE with a generous donation of \$500 for sponsoring student poster presentation awards



Dr. Chakra Budhathoki and family from Perry Hall, MD with a generous donation of \$500



Dr. Kishor Bhattarai and his family from Davis, CA with a generous donation of \$500



Mr. Prabin Bhandari Baltimore, MD with a generous donation of \$500



Ghimire Homes Nottingham, MD with a generous donation of \$500

Thanks to Our Silver Sponsors

- Mr. Basudev Sharma Pokhrel & Pokharel Pest Control from Ellicott City, MD
- Mr. Sudarshan Paudel from Nottingham, MD
- Mr. Ram Bhandari from Parkville, MD
- Mr. Kiran Pantha from Westminster, MD
- Mr. Krishna K.C from Baltimore, MD
- Mr. Prem Purja Pun Baltimore, MD
- Mrs. Shrijana Khanal from Baltimore, MD
- Mr. Ganesh Lamichhane from Baltimore, MD
- Mr. Narayan Kandel, Bishnu Ghimire, Bhanu Gautam, Pizzaman Restaurant & Bar, Columbia, MD

NAPA is grateful to all our sponsors for the generous donation to the NAPA Conference Fund. If you or your business would like to support the conference fund, please let us know. We appreciate any level of support.

Conference Fundraising Subcommittee, NAPA

Conference Theme: Climate-Smart and Innovative Agriculture

NAPA 4TH BIENNIAL INTERNATIONAL SCIENTIFIC CONFERENCE

MAY 24-26, 2024

Workshop Title:



R Workshop for Those Who Never Code Before

Dive into the world of coding with our beginner-friendly workshop during the NAPA 4th Biennial International Conference in Baltimore, MD, designed specifically for those with no prior experience. This workshop will introduce you to the basics of R programming, emphasizing its powerful applications in data science and statistics.

Presented By-

Dr. Bharat Pokharel

Associate Professor of Applied Statistics
Interim Chair, Department of Environmental Science
College of Agriculture
Tennessee State University
Nashville, TN



Maritime Conference Center

692 Maritime Blvd, Linthicum Heights, MD 21090

www.napaamericas.org

NAPA 4TH BIENNIAL INTERNATIONAL SCIENTIFIC CONFERENCE

MAY 24-26, 2024



NAPA TABLE TENNIS (TT) CUP

Join us for an exciting TT competition as part of the 4th NAPA Biennial International Scientific Conference. Whether you're a seasoned player or a beginner, this is your chance to showcase your skills, win prize, and have a great time!



For more information, contact:
Dr. Janak Dhakal
jdhakal@umes.edu

www.napaamericas.org

**MARITIME
CONFERENCE
CENTER**

692 Maritime Blvd,
Linthicum Heights,
MD 21090

NAPA 4TH BIENNIAL INTERNATIONAL SCIENTIFIC CONFERENCE

MAY 24-26, 2024 | BALTIMORE, MARYLAND, USA



NAPA

कृषि कविता प्रतियोगिता

मे २४-२६, २०२४ मा अमेरिकाको बाल्टिमोर (मेरिल्यान्ड) मा हुन गइरहेको चौथो द्वैबार्षिक अधिवेशनमा आयोजना हुने बृहत् कृषि कविता प्रतियोगितामा अधिवेशनका सहभागी सर्जकज्यूहरूलाई आफ्ना रचना सहित उपस्थित भई प्रतियोगितामा भाग लिएर कार्यक्रमको शोभा बढाई दिनु हुन हार्दिक अनुरोध गर्दछौं |



थप जानकारीको लागि सम्पर्क गर्नु होला :
कृष्ण पौडेल
इमेल : poudelkrish1@yahoo.com

www.napaamericas.org

With 217 abstracts submitted from nine countries for oral and poster presentations, the conference ensures a diverse range of scientific viewpoints. This reflects its global reach and interdisciplinary nature, providing attendees with the chance to engage with cutting-edge research from around the world, fostering international collaboration.

Please stay tuned for further information!

Conference Organizing Committee

Conference Theme: Climate-Smart and Innovative Agriculture

NAPA Election

Call for Nominations for Executive Committee

(Date of call: March 18, 2024)

NAPA Election Commission invites nominations from its members to serve on the Executive Committee (EC) for a two-year term beginning May 27, 2024. The nominations are called for the following positions:

- President (1)
- Vice President (1)
- General Secretary (1)
- Joint Secretary (1)
- Treasurer (1)
- Executive Members (6)



Interested NAPA members shall self-nominate, and one member can self-nominate for only one position mentioned above. To simplify the nomination process, no 3rd party nomination will be accepted. Nominations must be submitted to the Election Commission no later than April 22, 2024 (11:59 PM EDT) for consideration. Nominations must be submitted by following the guidelines and procedures as described below.

Nomination Guidelines and Procedures:

While submitting a self-nomination, the following guidelines and procedures must be observed:

- Must be a NAPA Life Member.
- In the case of the President, interested members must have served at least one term in the EC.
- One individual member is eligible to submit a nomination for only one position.
- The position being self-nominated must be specified.
- The nominee must provide the following information:
 - a. Name:
 - b. Current mailing address:
 - c. Valid e-mail address:
 - d. Valid phone number:
 - e. Member in good standings as of April 22, 2024: Yes or No
 - f. Current Officer: Yes or No
- Each nominee shall provide a statement describing why he or she is eligible for the position according to the nomination guidelines described above and the NAPA bylaws.
- Each nominee shall provide a statement of intent describing in no more than 500 words (maximum limit) why he or she uniquely qualifies to serve in the position and their vision for NAPA.
- Nomination must be submitted no later than April 22, 2024 (11:59 PM EDT).
- Nomination must be submitted online at <https://www.napaamericas.org/Election-2024>.

For other information about the nomination process and election, please visit the NAPA website at:
<https://www.napaamericas.org/Election-2024>.

Respectfully,

Election Commission

Dr. Prakash Malla, Chief Commissioner

Ms. Gita Koirala, Commissioner

Dr. Ramesh Pokhrel, Commissioner

NAPA Election

Timetable for the 2024 NAPA Election

(Date of announcement: February 21, 2024)

The 2024 Election Commission of the Association of Nepalese Agricultural Professionals of Americas (NAPA) has finalized the following timetable for conducting the 2024 Executive Committee (EC) election according to the bylaws of the Association. This timetable will be strictly followed. If it does not specify a time, it should be understood as 11:59 PM Eastern Time on that date.

	Date	Actions
1	February 21, 2024	The first Notice sent regarding the Election for the Executive Committee – highlights voters’ eligibility
2	March 18, 2024	Nomination Opens - Call for nomination for all EC positions will be announced on or before this date
3	April 22, 2024	Last date to be a member or renew membership - Only dues-paying members by this date shall be eligible to contest or vote in the election
4	April 22, 2024	Last date for submitting nominations for all positions to the Election Commission (11:59 PM EDT)
5	April 24, 2024	Publication of eligible voters which will be posted on the NAPA website (https://napaamericas.org/)
6	April 27, 2024	Last day to claim on voters list (Eligibility of voting members)
7	April 29, 2024	Publication of corrected/revised eligible voters list which will be posted on the NAPA website (https://napaamericas.org/)
8	April 30, 2024	A list of candidates will be posted on NAPA website (https://napaamericas.org/)
9	May 6, 2024	Last date to submit any concern about the nominated candidates to the Election Commission
10	May 8, 2024	Last day to withdraw nomination by candidates
11	May 10, 2024	Publication of the final list of candidates will be posted on the NAPA website (https://napaamericas.org/)
12	May 13-20, 2024	Online voting begins on May 13, at 8:00 AM and ends on May 20, at 11:59 PM EDT
13	May 25, 2024	Onsite voting at the site of the biennial convention by secret ballots (692 Maritime Boulevard, Linthicum Heights, Maryland, 21090). Voting Time: 12:00 PM – 2:00 PM EDT
14	May 26, 2024	Election Result Announcement at the AGM Meeting

Election Commission

Dr. Prakash Malla, Chief Commissioner

Ms. Gita Koirala, Commissioner

Dr. Ramesh Pokhrel, Commissioner



NAPA Webinar Series-38 and 39

NAPA hosted the 38th Webinar, presented by Prof. Gopi Upreti. The talk was focused on the his recently published book “Ecosociocentrism: The Earth First Paradigm for Sustainable Living.”

Congratulations Prof. Upreti.

Association of Nepalese Agricultural Professionals of Americas (NAPA)
Webinar Series: 38

**Ecosociocentrism: The Earth First Paradigm
A Journey from Anthropocene to Symbiocene.**



Gopi Upreti
Professor: TU (IAAS)
and Advisor NAPA

Collective human consciousness can help us realize “The Earth First Paradigm”.
If we do not embrace “The Earth First Paradigm for Sustainable Living”, we will
be sailing in a leaky boat on a Stormy Sea?

USA Time:
February 18, 2024 (Sunday)
7:00 PM CST

Nepal Time:
February 19, 2024 (Monday)
6:45 AM

फागुन ७, सोमवार
बिहान: ६:४५ बजे

Zoom: 829 0346 5507
Facebook LIVE: www.facebook.com/NepaleseAgriculturistAmericas



NAPA hosted the 39th Webinar, presented by Dr. Keshav Bhattarai. The talk was focused on addressing seismic vulnerability and youth outmigration in Nepal. It was a great talk.

Thank you, Dr. Bhattarai.

Association of Nepalese Agricultural Professionals of Americas (NAPA) presents
NAPA Webinar Series: 39
**Building Resilient Communities: Addressing Seismic Vulnerability and
Youth Outmigration in Nepal**



Keshav Bhattarai, Ph.D.
Professor of Geography,
University of Central
Missouri
Warrensburg, MO, USA



USA Time:
April 07, 2024 (Sunday)
7:30 PM CST

Nepal Time:
April 08, 2024 (Monday)
6:15 AM

चैत्र २६, सोमवार
बिहान: ६:१५ बजे

Zoom: 829 0346 5507
Facebook LIVE: www.facebook.com/NepaleseAgriculturistAmericas

Training/Seminar

NAPA organized an event centered around the art of crafting interdisciplinary research proposals, featuring Dr. Xiangming Xiao as the presenter. Dr. Xiao, renowned in the field for his expertise, delivered insights into the intricacies of composing effective grant proposals. The focus of the discussion was on elucidating fundamental techniques pivotal for securing successful grants in the interdisciplinary research realm.

Member Only Event

Writing Interdisciplinary Research Proposals: Practical Insights

Dr. Xiangming Xiao

*George Lynn Cross Research Professorship
Professor of Ecology and Remote Sensing,
University of Oklahoma*

- ❖ 68 grants (> \$277 million)
- ❖ >400 peer-reviewed articles
- ❖ >34,000 citations

USA Time: March 10, 2024
Sunday: 7:00 PM CST

Nepal Time: March 11, 2024
Monday: 5:45 AM

Organized By: NAPA – Research & Capacity Building Committee



NAPA organized a dynamic event titled "New Faculty Spotlight," focusing on the faculty position. This gathering served as a platform where students and Postdoctoral scholars received invaluable career guidance, while emerging faculty members garnered constructive feedback and forged collaborative opportunities to solidify their pioneering programs.



New Faculty Spotlight

for networking and professional development

NAPA Member Only Event

SPEAKERS



SANTOSH DHAKAL, DVM, PhD
Assistant Professor
Department of Diagnostic
Medicine/Pathobiology
Kansas State University



JASMINE NEUPANE, PhD
Assistant Professor
Division of Plant Science and Technology
University of Missouri-Columbia



JANAK DHAKAL, PhD
Assistant Professor
Department of Agriculture, Food and
Resource Sciences
University of Maryland Eastern Shore



SURAJ UPADHAYA, PhD
Assistant Professor
School of Agriculture, Communities and
the Environment
Kentucky State University

Organized by:
Student Coordination Committee, NAPA

USA Time: January 14, 2024 (Sunday: 7:00 – 8:30 PM CST)
Nepal Time: January 15, 2024 (Monday, 6:45 AM)

Call for Articles: Global Journal of Agricultural and Allied Sciences

The GJAAS Editorial Board is requesting all potential authors from around the world to submit articles for the spring 2024 issue of the journal. There are two categories of articles:

1. Full articles: original work

- Word limit 7,500, excluding the list of cited references.
- Total number of Tables and Figures together not exceeding 12.

2. Short communication

- A short manuscript with original research and/or methodology with a word excluding abstract, tables, figures, and references.
- When tables and figures are included, the manuscript should not exceed illustrations.

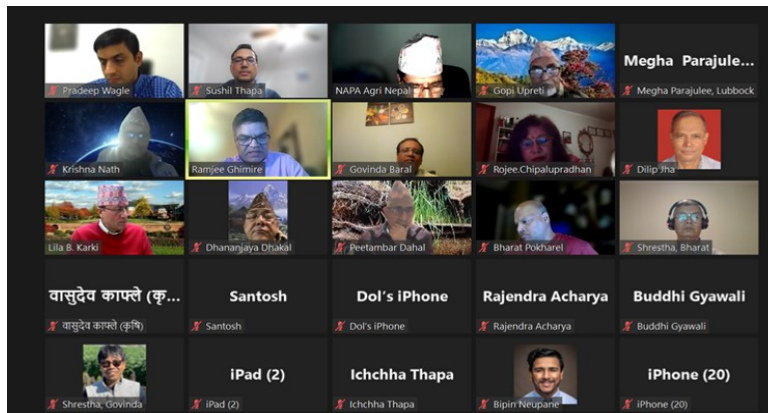


Visit the GJAAS site for detailed guidelines for preparing quality articles and submitting for publication: <https://gjaas.org/index.php/GJAAS/about/submissions>

NAPA Day Celebration

On January 7, 2024, NAPA Day marked the 8th anniversary of the organization's establishment with a series of celebratory events and activities. This virtual event included the following.

- Welcome and opening: General Secretary Dr. Nityanand Khanal
- Highlights of NAPA's past and future activities – President Dr. Pradeep Wagle
- Agri-poem recital – Mr. Govinda Baral, Dr. Sushil Thapa
- Welcome to newly joined members – Vice President Dr. Ramjee P. Ghimire
- Agri-poem recital – Prof. Gopi Upreti, Dr. Bharat Shrestha
- Update on 2024 Conference – Conference Organizing Committee Chair Dr. Lila B. Karki
- Agri-poem recital – Dr. Krishna Nath, Dr. Pitambar Dahal
- Update on Endowment Fund – Endowment Board Chair Dr. Megha N. Parajulee
- Song/Music – Mr. Raju Thada Magar and friends
- Agri-poem recital – Dr. Nityananda Khanal
- Closing Remarks - Vice President Dr. Ramjee P. Ghimire



Nepal News

Highlights of agriculture-related news/events in Nepal

Compiled by: Utsav Pageni

Institution: Agriculture & Forestry University, Rampur Chitwan

Email: utsavpageni11@gmail.com



Karnali Exports Goats Worth NPR 3.24 Billion

As per the Ministry of Land Management, Agriculture, and Cooperative Development of Karnali Province, the region has earned NPR 3.24 billion from goat exports in the fiscal year 2022/23. The province Minister Bhim Prakash Sharma also briefed on other achievements including exports of vegetables, kiwi, ginger, and milk worth totaling NPR 240 million from various districts.

(January 25, The Himalayan Times)

Cardamom Export Thrives Despite Production Challenges

Despite a significant drop in production, the exports of cardamom have generated promising revenue nearly the same as that in the previous year during the present fiscal year 2022/23. The rise in cardamom prices helped compensate for the decline in export volume despite lowered production. Statistics showed the total cardamom export worth NPR 5.17 billion in the first eight months of the current fiscal year compared to NPR 5.86 billion during the same period of the previous fiscal year.

(March 24, The Rising Nepal)

Government, Milk Producers Agree on Five Points

The agreement has been concluded between the government and milk producers, following a symbolic act of protests by pouring down milk on the streets pressurizing the government to facilitate pending payments amounting to about NPR 7 billion for the milk sales. The Ministry of Agriculture and Livestock Development of Nepal along with the Central Dairy Cooperative Association Limited reached an agreement to close out the payables to milk farmers by April 3, 2024. Following the agreement, farmers have suspended the ongoing protest for now.

(March 3, myRepublica)

Farmers Protest by Throwing Fish on Roads

In the district of Sarlahi, fish farmers protested by throwing fish on the road at Phuljor Chowk in demand of electricity supply at subsidized price rates as provisioned for the agricultural sector instead of current supply charges at industrial rates from the Nepal Electricity Authority. In the protest, the slogans against the high tariffs were chimed by the farmers along with the blockade of the highway. The protest was joined by Mr. Manoj Acharya, the Mayor of Ishwarpur Municipality along with other local political leaders, lending support to the demand of the fish farmers.

(March 22, ekantipur)

Rice Imports Decline, Wheat Surges

In a recently conducted trade review, imports of paddy and rice decreased by 45 percent compared to the corresponding same period in the last fiscal year 2022/23. According to the Ministry of Agriculture and Livestock Development, rice production increased adding up to a total production of 5.724 million tonnes, turning out as the highest production record in Nepal to date. This record-high production is linked to the decline in rice imports. Meanwhile, there was a significant increase in wheat imports by 67 folds compared to the corresponding period of the last fiscal year.

(March 9, The Rising Nepal)

Nepal...

Captivating Chinese Interest in Nepali Orthodox Tea

The export of Nepali orthodox tea to China jumped by 88.31 percent generating revenue of NPR 10.53 million in the first eight months of the current fiscal year. The country exported 5 tonnes of orthodox tea to China. Globally, Nepal exported 22 tonnes of tea worth NPR 60 million during the same period. Chinese interest in Nepali tea is growing as traders visiting the country are on the rise seeking negotiations and contracting deals. Efforts are furthermore being made to explore new markets for orthodox tea, which is encouraging for the future of the tea industry, despite a slight decline in exports in recent years, overall.

(March 24, The Kathmandu Post)

Nepali Pickles Go Global

The Department of Customs, imports and reported exports of pickles over NPR 100 million in the fiscal year 2022/23. With the rise of Nepali origins living abroad worldwide, the demand for Nepalese pickles is on the rise in several countries, and the sales are expected to grow even more in the future. The Nepal-produced vegetable and meat-based pickles are gaining popularity and making a presence on foreign store shelves such as in the USA, Australia, Canada, Belgium, the UK, Korea, and others.

(January 21, The Kathmandu Post)

Sugar Industries Face Shortages in Sugarcane Supply

Industries are facing a shortage of sugarcane raw material for sugar production, despite the season of sugarcane production presently. As a result, the sugar industries have not been able to operate at full production capacities. Consequently, the manufacturers have claimed for the increased cost of sugar. The issue is likely to worsen even further, as, the sugarcane farmers are reported to gradually shifting to alternative crops concerning a lack of payments for the produce supplied to the sugarcane industries for a long time for a few years now.

(February 14, The Rising Nepal)

FAO Plans to Boost Exports

The Food and Agriculture Organization of the United Nations (FAO) has launched the Hand in Hand Initiative program in Nepal, partnering with investors and businessmen to commercialize Nepal's export-oriented agricultural products. The program prioritizes major export-oriented produce such as cardamom, pepper, ginger, pangasius species of fish, potatoes, yak cheese, and Himalayan honey. FAO has called for investment for production and the promotion of such products in helping to achieve the much-needed economic transformation in agricultural production in Nepal.

(March 11, Gorkhapatra)

**CLICK HERE FOR
NAPA Biennial Conference**

PROCEEDINGS



**CLICK HERE FOR
Global Journal of Agricultural
and Allied Sciences**



GJAAS

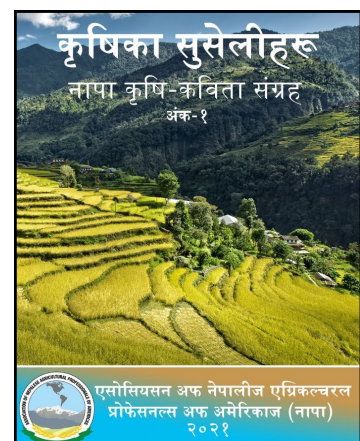
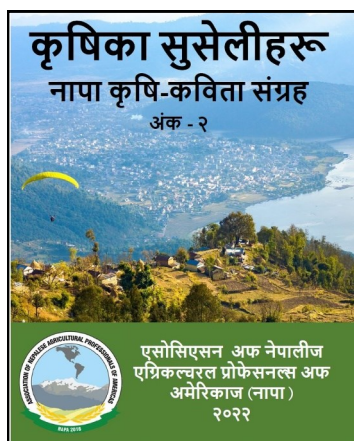
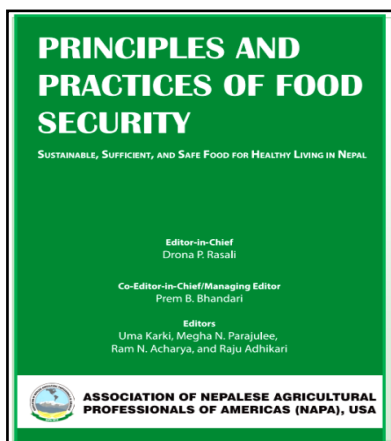
Global Journal of Agricultural and Allied Sciences

Photograph in Action



Grain sorghum (*Sorghum bicolor* L. Moench), also known as milo, is a versatile cereal crop cultivated for its grains, which are used for human consumption, animal feed, and industrial purposes. It is drought-tolerant and can thrive in semi-arid regions, making it an essential crop in areas with limited water availability. With its gluten-free nature and nutritional profile rich in fiber and antioxidants, grain sorghum is gaining popularity as a healthy alternative in various food products worldwide. *Source: Sushil Thapa*

NAPA Publishes a Book and Agri-Poem Compendiums



Appeal for Contribution to NAPA Endowment Fund

Dear Sir/Madam:

The Endowment Fund Advisory Board (EFAB) of the Association of Nepalese Agricultural Professionals of Americas (NAPA) sincerely requests you to consider a donation to its Endowment Fund. Your donations to the endowment fund would help NAPA achieve its overarching goal, “Global Food Security through Agricultural Transformation.” NAPA is a non-profit, non-governmental, non-religious, and non-political professional organization dedicated to serving humanity through scientific research, teaching, outreach, and charitable initiatives in agricultural and allied disciplines. Since its inception in 2016, NAPA has implemented outstanding programs such as international scientific conferences, scholarships, research mini-grants, webinars, seminars and workshops, peer-reviewed Global Journal of Agriculture and Allied Sciences (GJAAS), a seminal book on food security, Research and Policy Briefs, and Agri-Connection – an online quarterly newsletter.

To facilitate and expand its endowment fund, originally initiated in 2017, envisioning the economic and programmatic sustainability of this emerging organization, the NAPA Executive Committee established an EFAB in January 2021. The EFAB envisages utilizing the endowment revenue to sponsor NAPA's flagship programs, prioritizing donor-specified activities while allowing the principal to grow through its productive investment strategies.

You can contribute to this noble cause by establishing the fund in your name or your beloved ones'. As a contributor, you can also express your activity of interest to NAPA, consistent with NAPA's mission and vision. It is an incredible opportunity for you to contribute to this cause through an upfront donation or any amount on a monthly or annual basis for any number of years, based on your interest and willingness. Donations to NAPA endowment funds are tax-deductible. Our Endowment Fund Donation Recognitions/Tiers are:

Platinum Sponsor ≥ \$10,000	Diamond Sponsor ≥ \$7000
Gold Sponsor ≥ \$5000	Silver Sponsor ≥ \$3000
Bronze Sponsor ≥ \$1000	Green Sponsor ≥ \$500
Valued Sponsor or Supporter <\$500 (allocated to common/pool fund)	

The endowment fund's beauty is that a sponsor may customize the donation as a single or multiple installment(s) over the years. The tiered recognition level may scale up anytime your support reaches the designated tier, as mentioned above. The EFAB assures you that every donation to this fund will be maintained, managed, and utilized transparently.

Please support NAPA with your kind donations!

Thank you everyone!

Endowment Fund Advisory Board



ENDOWMENT FUND ADVISORY BOARD ~ESTD. 2020~

Chair
Dr. Megha N. Parajulee

**Founding Chair and
Director**
Dr. Lila B. Karki

Director
Dr. Pradeep Wagle

**Member Secretary/
Outreach and
Investment
Coordinator**
Dr. Aditya R. Khanal

**Outreach and
Investment
Coordinator**
Dr. Basu D. Bhandari

“The Endowment Fund Advisory Board has already received a pledge commitment of over \$110,000.00



www.napaamericas.org

Membership Update (March 31, 2024)

Membership Type	Total
Honorary Member	1
Founding Life Member	5
Senior Life Member	6
Life Member	133
Regular Member	12
Student Member	100
Associate Life Member - Nepal	76
Associate Student Member - Nepal	14
Associate Life Member - International	6
Family - Joint Life Member	6
Total	359

Welcome New Members

Full Name	Current Affiliation
Regular Member	
Dr. Safal Kshetri	Washington State University, USA
Student Member	
Amrit Dumre	Oklahoma State University, USA
Saugat Khanal	Oklahoma State University, USA
Sangam Dangal	Murray State University, USA
Roshani Shrestha	Michigan State University, USA
Ajay Dhukuchhu	North Dakota State University, USA
Kushal Naharki	West Virginia University, USA
Nabin Bhandari	Auburn University, USA
Pabitra Joshi	University of Idaho, USA
Apekshya Senchuri	Kimberly Research and Extension Center, USA
Shreeya Kisi	University of Alberta, Canada
Arati Joshi	University of Florida, USA
Rupak Karn	Texas Tech University, USA
Bishal Dhakal	The Ohio State University, USA
Ritesh K. Yadav	Agriculture and AgriFood Canada, Canada
Sravan Kumar Sanathanam	Alabama A&M University, USA
Madan Sapkota	Texas A&M University, USA
Shreesha Pandeya	Kentucky State University, USA
Dipesh Oli	Kentucky state university, USA
Pratima Subedi	Tennessee State University, USA
Anmol Kandel	University of Maryland, USA
Biwek Gairhe	University of Maryland College Park, USA
Prabhat Poudyal	North Dakota State University, USA
Sudha Bhandari	Kentucky State University, USA
Santosh Paudel	Kentucky State University, USA
Dipak Khanal	Texas A&M University, USA
Kamal Bahadur Sunar	Hiroshima University, Japan
Associate Student Member – Nepal	
Aarju Aryal	IAAS, Tribhuvan University, Nepal
Life Member	
Dr. Rajan Shrestha	Texas A&M AgriLife Research, USA
Dr. Vitalis Temu	Virginia State University, USA
Dr. Purushottam Prasad Mainali	Dayton, Ohio, USA
Dr. Pabitra Aryal	Virginia Tech, USA
Dr. Sailesh Adhikari	Virginia Tech, USA
Associate Life Member	
Dr. Ram Chandra Bhujel	Asian Institute of Technology, Thailand
Mohamad Husneid Azad	Nepal Agricultural Research Council, Nepal
Mohammad Shahanavaz Ali	Nepal Agricultural Research Council, Nepal
Basu Dev Kaphle	Ministry of Agriculture and Livestock Development, Nepal
Dr. Nanda Prasad Shrestha	Lalitpur, Nepal

Appeal to Join/Renew Membership

We would like to request potential members to join NAPA - a **common professional platform for all of us**. Meanwhile, we request all members who are not currently in good standing to renew their memberships. Members' contributions thus far to bring NAPA to the current level is greatly appreciated. We request our dedicated members and well-wishers to promote NAPA to the next level by recruiting eligible friends/colleagues/students in your network. New NAPA members must write the recruiter's name in the "referred by" row in the membership form. **The highest recruiter(s) will be recognized at our Biennial Scientific Conference.**

A few reasons to join/renew NAPA membership:

NAPA is a member-driven voluntary organization. Members can benefit from the association to advance their career growth, develop organizational practices and leadership skills at all stages. Some of the membership benefits include:

- Peer-to-peer networking and research collaboration opportunities
- Professional development and advancement
- Serving on various committees
- Opportunity to publish scientific works in NAPA's various outlets (Journal, Book, Research/Policy Brief, and Agri-Connection)
- Opportunity to sponsor scholarships and research mini-grants in preferred agricultural institutions and disciplines in Nepal through NAPA
- Eligibility for organizational awards, scholarships, and endowment funds
- Opportunity to share scientific works, experiences, and expertise via association's Talk Sessions (Webinars) and Online Teaching/Learning Programs
- Joining global expert repository to contribute to Nepalese Agriculture and beyond
- Keeping up-to-date on association's programs and activities
- Volunteering and charitable opportunities
- Discounted rates for registration and hotel reservation during scientific conferences organized by the association

Please check for more details on Joining NAPA at <http://napaamericas.org/join-napa.php> and membership type and fees at <http://napaamericas.org/membership.php>. We look forward to welcoming you for a great cause. Please let us know if you have any questions and willingness to volunteer in various committees.



Thank you!

On behalf of NAPA Executive Committee,

Dr. Ramjee Ghimire

Vice President

Chair, Membership Drive Committee

Email: ramghi@gmail.com

BECOME A
MEMBER
JOIN TODAY!

Renew now



Membership Type and Fee

NAPA Membership Drive Committee seeks to create a database of students, faculty, researcher, and other professionals of agriculture and allied fields in public, private and nonprofit institutions, industries, and enterprises working in Americas, Nepal and beyond; establish contact with potential NAPA members and promote awareness about NAPA's vision, mission, goals, objectives, and activities; conduct membership drive; inform members in advance their membership; and regularly update the membership directory on the NAPA website. NAPA membership pool has nine categories including honorary members, senior members, and members for the eligible spouse.

Table 1. Membership fees and eligibility.

Membership type	Fee	Eligibility
Regular Member	USD 50 (for two years)	Individuals who hold at least an undergraduate or bachelor or equivalent degree in agriculture or allied areas
Student Member	USD 25 (for two years)	Current students of agricultural and allied areas of studies who are in good standing student status.
Life Member	USD 200 (one time)	Individuals having met regular/general member's category and pay defined dues at a time.
Life Member (eligible spouse)	USD 100 (one time)	Eligible spouse of Life members
Family (Joint) Member	USD 15 (for two years) or USD 50 (one time for Life Membership)	Spouse of a member of any of the five categories (regular/general, student, life, honorary, and associate), who is not eligible for other categories of membership. Family members will not have voting right.
Associate Membership (outside Nepal)	USD 25 (for two years) or USD 100 (one time for Life Membership)	Interested individuals who do not qualify for membership types above. Associate members shall not have a voting right and shall not be eligible for the candidate of the Executive Committee. An Associate member may become Associate Life member with the payment of defined dues at a time.
Associate Life Membership from Nepal	NPR 5,000 (one time)	Interested individuals who do not qualify for membership types above. One-time membership fee of NRs. 5,000.00 (five thousand rupees) to become Associate Life Member.
Associate Student Membership from Nepal	NPR 1,000 (one time)	Undergraduate and graduate students in good standing in Nepal. One-time membership fee of NRs. 1,000.00 (one thousand rupees) to become Associate Student Member as long as they are a student in Nepal.

NAPA is for and by members. Please join NAPA and request your friends and family to join too. We would like to request eligible and interested people to join the NAPA family and work together with other fellow members. You can access this link to join NAPA: <https://napaamericas.org/join-napa.php>.

NAPA Committees

Executive Committee (EC) (2022-2024)

President

Dr. Pradeep Wagle

Vice President

Dr. Ramjee Ghimire

General Secretary

Dr. Nityananda Khanal

Joint Secretary

Dr. Sushil Thapa

Treasurer

Dr. Bishwo Adhikari

Executive Members

Dr. Buddhi Gyawali

Dr. Dev Paudel

Mr. Dol P. Khanal

Dr. Kripa Dhakal

Dr. Pramod Pokhrel

Dr. Uma Karki

Immediate Past President

Dr. Megha N. Parajulee

Nepal Liaison: Mr. Kiran Ojha

Advisory Council

Dr. Dainik B. Karki Nepali

Dr. Drona Rasali

Prof. Gopi Upreti

Dr. Lila B. Karki

Dr. Megha N. Parajulee

Dr. Nanda P. Joshi

Dr. Narayan Khadka

Dr. Peetambar Dahal

Dr. Prakash Malla

Endowment Fund Advisory Board (EFAB)

Chair: Dr. Megha N. Parajulee

Founding Chair and Director

Dr. Lila B. Karki

Director: Dr. Pradeep Wagle

Member Secretary/ Outreach and Investment Coordinator

Dr. Aditya R. Khanal

Outreach and Investment

Coordinator

Dr. Basu D. Bhandari

Student Coordination Committee (SCC)

Chair

Mr. Madhav Parajuli

Member Secretary

Mr. Bipin Neupane

Members

Ms. Astha Pudasainee

Ms. Anju Pandey

Mr. Bhuwan Shrestha

Mr. Bibek Acharya

Mr. Deepak Ghimire

Mr. Manoj Paudel

Ms. Namrata Acharya

Ms. Sadikshya Poudel

Mr. Suraj KC

Mr. Uddhav Bhattarai

Membership Drive Committee (MDC)

Chair

Dr. Ramjee Ghimire

Members

Dr. Santosh Dhakal

Mr. Madhav Parajuli

Ms. Kabita Paudel

Information Technology Committee (ITC)

Chair

Dr. Dev Paudel

Members

Dr. Bijesh Mishra

Mr. Bipin Neupane

Dr. Pramod Pokhrel

Ms. Sandhya Neupane

Research/Policy Brief Editorial Committee (RBEC)

Chair

Dr. Ramjee Ghimire

Members

Dr. Lila Khatiwada

Dr. Pramod Pantha

Mr. Thaneshwor Bhandari

Award and Recognition Committee (ARC)

Chair

Dr. Uma Karki

Members

Dr. Nanda P. Joshi

Dr. Aditya Khanal

Global Journal of Agricultural and Allied Sciences (GJAAS)

Editor-in-Chief

Dr. Uma Karki

Managing Editors

Dr. Aditya R. Khanal

Dr. Ananta Raj Acharya

Dr. Bharat Pokharel

Editors

Dr. Chakra Budhathoki

Dr. Kalidas Subedi

Dr. Prem Bhandari

Dr. Ram Chandra Bhujel

Dr. Srinivasa Mentreddy

Dr. Vitalis Temu

Women in Agricultural and Allied Professions (WAAP)

Chair

Dr. Kripa Dhakal

Members

Ms. Prava Adhikari

Ms. Pushpa Pandey

Dr. Romy Das Karna

Ms. Santoshi Chaudhary

Ms. Shubhechchha Sharma

Research and Capacity Building Committee (RCBC)

Chair

Dr. Pramod Pokhrel

Members

Dr. Keshav Sharma

Dr. Santosh Dhakal

Dr. Sharad P. Marahatta

Dr. Shital Poudyal

Dr. Shyam Kandel

Dr. Sushil Paudyal

Collaboration and Resource Building Committee (CRBC)

Chair

Dr. Buddhi Gyawali

Members

Dr. Bharat Pokharel

Dr. Keshav Bhattarai

Dr. Krishna Paudel

Dr. Suraj Upadhyaya

Webinar Committee (WC)

Chair

Dr. Khushi Ram Tiwari

Members

Dr. Dilip Panthee

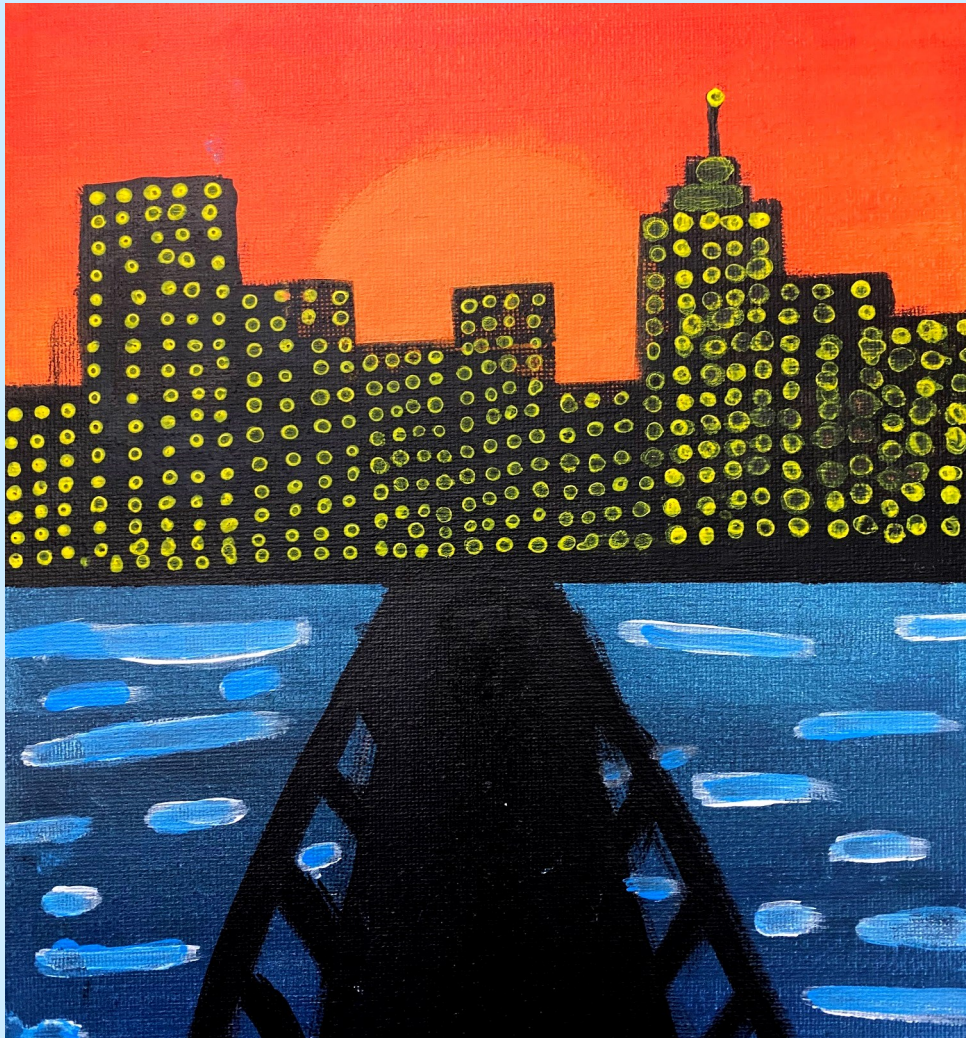
Dr. Rajan Shrestha

Ms. Sujata Bogati

KidsZone



Sushan Thapa
Grade 5, Missouri



Encourage Your Kids to Participate

Dear NAPA members and AC readers,

Please inform and encourage your kids to contribute for KidsZone. Creations such as arts, drawings, and any forms of writings (short essay, poem, story, memories, etc.) related to agriculture and allied sciences are accepted.

KidsZone also includes features on kids, animals, plants, life at school, and issues of particular interest to kids.

Please include the following:

Name:
School (optional):
Grade:
State/District:
(And a photograph)

KIDS TODAY, SCIENTISTS TOMORROW!

Article

Transforming Rice Farming through Direct Seeded Cultivation

Ishwor Shrestha and Seema Shrestha*
Agriculture & Forestry University (AFU), Chitwan, Nepal
**Email: eshworcresta@gmail.com*

Introduction

Rice (*Oryza sativa* L.) is one of the major staple food crops critical for food and nutritional security for more than 50% of the global population (Kumar et al., 2022). Thereupon, it is important to ensure stable and increased rice production to feed the growing human population (Roychowdhury et al., 2012). Globally, rice production is estimated at 513.54 million metric tons in 2023/24 (Statista, 2024). The crop is cultivated across more than 95 countries in about 11% of the world's arable land, and about 90% of rice is produced in Asia (Bista, 2018).

Conventionally, rice is grown by puddling the rice fields and transplanting the seedlings (TPR) in the puddled wet planting beds. This method offers benefits such as enhanced nutrient mobility, weed suppression, and a stable yield (Kumar et al., 2022). However, the standing water in the conventional lowland paddy field increases the risks of arsenic toxicity and emission of significant amounts of greenhouse gases, primarily methane gas (Kumar et al., 2016). Therefore, the conventional rice farming system requires reconsideration for alternative sustainable ways that can cope with the challenges posed by climate change and the increased food demands. Globally, producers have increasingly shown interest in exploring alternative rice cultivation techniques (Nawaz et al., 2019). One such potential alternative to address the concerns is the Direct Seeded Rice (DSR) technique.

Direct seeding practice involves rice cultivation from seeds sown in the field instead of transplanting seedlings from the nursery (Farooq et al., 2011). The field requires a minimum of sufficient moisture for successful germination in DSR unlike that of flooded conditions in the TPR method (Cabangon et al., 2002). The role of DSR has been realized as crucial, particularly in Asian countries with low income and high population growth rates, and the demand is estimated to increase by 30-50% over the next 30 years (Mortimer et al., 2008). At present, 23% of rice cultivation is under direct-seeding practice worldwide (Rao et al., 2007). The article briefly describes the methods of DSR.

Methods of direct seeded rice (DSR)

The methods of DSR as described by Joshi et al. (2013) are as follows:

I. DSR with dry seeding (dry-DSR): It involves the sowing of seeds in the field with optimum moisture conditions. Seeds are sown with pre-sowing irrigation to enhance a good seed germination rate and establishment before the onset of monsoons. This method may be practiced using different approaches:

- Broadcasting of dry seeds on unpuddled soil after Zero-till or Conventional-till
- Dibble method in a well-prepared field
- Drilling of seeds in rows with Zero Till or conventional till, minimum till using a power tiller-operated seeder.

II. DSR with wet seeding (wet-DSR): The wet-DSR involves the sowing of pre-germinated seeds on or into puddled soil. Seeds can either be broadcasted or sown in-line using a drum seeder. Sowing pre-germinated seeds on the surface of puddled soil leads to aerobic Wet-DSR and conversely, when sown into puddled soil implies anaerobic Wet-DSR.

III. Water seeding: Water seeding is widely practiced in irrigated lowlands with 5-15 cm standing water.

Desirable traits of rice cultivars suitable for DSR

- Lodging resistance (Mackill et al., 1996)
- Early seedling vigor for weed competitiveness (Zhao et al., 2006)
- Vigorous root system for better anchorage and soil moisture extraction (Pantuwan et al., 2002)
- Anaerobic germination capability (Ismail et al., 2009)
- Rapid shoot and root growth (Cui et al., 2002)
- High crop growth rate during the reproductive phase (Kato et al., 2009)

Transforming Rice ...

Advantages of DSR

- Saves irrigation water use by 30– 50% (Kumar et al., 2019).
- Reduces greenhouse gas emissions (primarily, methane) (Singh et al., 2005).
- Saves about 40% of labor needs for nursery raising, uprooting, and transplanting of the seedlings (Pandey & Velasco, 2002).
- Maintains soil aggregates, reduces percolation losses, avoids the formation of hard pans in the root zone, and ensures favorable soil conditions for succeeding crops (Sharma et al., 2003; Bista, 2018).
- Eliminates transplanting shock in DSR and promotes early maturity (7-10 days) which facilitates timely harvest and sowing of subsequent crops (Parthasarathi et al., 2012).

Disadvantages of DSR

- Potential yield reduction of as much as 10% (Qureshi et al., 2004).
- In wet and water seeding at the surface level, the lodging problem becomes prominent at maturity (Balasubramanian & Hill, 2002).
- High tendency of disease outbreaks like rice blast, sheath blight, sheath rot, and pests like brown planthopper, rice thrips, green leafhopper, and gall midge (Pongprasert, 1995).
- Decrease in nutrient uptake by rice roots (Johnson et al., 2005).
- High occurrence of root-knot nematode, which results in severe crop damage (Prot et al., 1994).
- DSR reduces the emission of CH₄ however increases the emission of N₂O (especially under dry-DSR) (Qureshi et al., 2004).

Conclusion

Direct-seeded rice offers a water-smart solution for sustainable rice production, offering benefits in terms of water savings, labor efficiency, and better soil health. The DSR is a technically and economically feasible cultivation tool, an eco-friendly alternative to conventional puddled transplanted rice. However, realizing the full potential of DSR requires addressing challenges related to weed management, seedbed preparation, and varietal development. Policymakers and government agencies should support and promote DSR practice in rice farming systems through investments and marketing support measures.



Figure 1. Rice field in Nepal.

References

- Balasubramanian, V., & Hill, J. E. 2002. Direct seeding of rice in Asia: emerging issues and strategic research needs for the 21st century. *Direct seeding: Research strategies and opportunities*, 15-39.
- Bista, B. 2018. Direct seeded rice: A new technology for enhanced resource-use efficiency. *International Journal of Applied Sciences and Biotechnology*, 6 (3), 181-198.
- Cabangon, R. J., Tuong, T. P., & Abdullah, N. B. 2002. Comparing water input and water productivity of transplanted and direct-seeded rice production systems. *Agricultural Water Management*, 57(1), 11-31.
- Cui, K., Peng, S., Xing, Y., Xu, C., Yu, S., & Zhang, Q. 2002. Molecular dissection of seedling-vigor and associated physiological traits in rice. *Theoretical and Applied genetics*, 105, 745-753.
- Farooq, M. K. H. M., Siddique, K. H., Rehman, H., Aziz, T., Lee, D. J., & Wahid, A. 2011. Rice direct seeding: Experiences, challenges, and opportunities. *Soil and Tillage Research*, 111(2), 87-98.
- Ismail, A. M., Ella, E. S., Vergara, G. V., & Mackill, D. J. 2009. Mechanisms associated with tolerance to flooding during germination and early seedling growth in rice (*Oryza sativa*). *Annals of Botany*, 103(2), 197-209.
- Johnson, S. E., Lauren, J. G., Welch, R. M., & Duxbury, J. M. 2005. A comparison of the effects of micronutrient seed priming and soil fertilization on the mineral nutrition of chickpea (*Cicer arietinum*), lentil (*Lens culinaris*), rice (*Oryza sativa*) and wheat (*Triticum aestivum*) in Nepal. *Experimental Agriculture*, 41(4), 427-448.

Transforming Rice ...

- Joshi, E., Kumar, D., Lal, B., Nepalia, V., Gautam, P., & Vyas, A. K. 2013. Management of direct seeded rice for enhanced resource-use efficiency. *Plant Knowledge Journal*, 2(3), 119-134.
- Kato, Y., Okami, M., & Katsura, K. 2009. Yield potential and water use efficiency of aerobic rice (*Oryza sativa* L.) in Japan. *Field crops research*, 113(3), 328-334.
- Kumar, A., Nayak, A. K., Das, B. S., Panigrahi, N., Dasgupta, P., Mohanty, S., ... & Pathak, H. 2019. Effects of water deficit stress on agronomic and physiological responses of rice and greenhouse gas emission from rice soil under elevated atmospheric CO₂. *Science of the Total Environment*, 650, 2032-2050.
- Kumar, A., Nayak, A. K., Mohanty, S., & Das, B. S. 2016. Greenhouse gas emission from direct seeded paddy fields under different soil water potentials in Eastern India. *Agriculture, Ecosystems & Environment*, 228, 111-123.
- Kumar, A., Nayak, A. K., Tesfai, M., Tripathi, R., Mohanty, S., Mohapatra, S. D., ... & Nagothu, U. S. 2022. Direct seeded rice: A potential climate-neutral and resilient farming system. In *Climate Neutral and Resilient Farming Systems* (pp. 106-126). Routledge.
- Mackill D. J., Coffman W. R., Garrity D. P. 1996. Rainfed lowland rice improvement. International Rice Research Institute, P.O. Box 933, Manila, Philippines. 242 pp.
- Mortimer, A. M., Riches, C. R., Mazid, M., Pandey, S., & Johnson, D. E. 2008. Issues related to direct seeding of rice in rainfed cropping systems in northwest Bangladesh. *Direct Seeding of Rice and Weed Management in the Irrigated Rice-Wheat Cropping System of the Indo-Gangetic Plains*, 272.
- Nawaz, A., Awan, M. I., Ijaz, M., Hussain, M., Ahmad, S., & Farooq, M. 2019. Direct seeding in rice: problems and prospects. *Agronomic Crops: Volume 1: Production Technologies*, 199-222.
- Pandey, S., & Velasco, L. 2002. Economics of direct seeding in Asia: patterns of adoption and research priorities. *Direct seeding: Research strategies and opportunities*, 3-14.
- Pantuwan, G., Fukai, S., Cooper, M., Rajatasareekul, S., & O'toole, J. C. 2002. Yield response of rice (*Oryza sativa* L.) genotypes to drought under rainfed lowlands: 2. Selection of drought resistant genotypes. *Field Crops Research*, 73(2-3), 169-180.
- Parthasarathi, T., Vanitha, K., Lakshamanakumar, P., & Kalaiyarasi, D. 2012. Aerobic rice-mitigating water stress for the future climate change. *Int J Agron Plant Prod*, 3(7), 241-254.
- Pongprasert, S. 1995. Insect and disease control in wet seeded rice in Thailand. *IRRI Discussion Paper Series (Philippines)*, (10).
- Prot, J. C., Villanueva, L., & Gergon, E. B. 1994. The potential of increased nitrogen supply to mitigate growth and yield reductions of upland rice cultivar UPL Ri-5 caused by *Meloidogyne graminicola*. *Fundamental and Applied Nematology*, 17(5), 443-452.
- Qureshi, A. S., Masih, I., & Turrall, H. 2004. Comparing land and water productivities of transplanted and direct dry seeded rice for Pakistani Punjab. *Paddy and Water Environment*.
- Rao, A. N., Johnson, D. E., Sivaprasad, B., Ladha, J. K., & Mortimer, A. M. 2007. Weed management in direct-seeded rice. *Advances in agronomy*, 93, 153-255.
- Roychowdhury, M., Jia, Y. L., & Cartwright, R. D. 2012. Structure, function, and co-evolution of rice blast resistance genes. *Acta Agronomica Sinica*, 38 (3), 381-393.
- Sharma, P. K., Ladha, J. K., & Bhushan, L. 2003. Soil physical effects of puddling in rice-wheat cropping systems. *Improving the Productivity and Sustainability of Rice-Wheat Systems: Issues and Impacts*, 65, 97-113.
- Singh, Y., Singh, G., Johnson, D., & Mortimer, M. 2005. Changing from transplanted rice to direct seeding in the rice-wheat cropping system in India. *Rice Is Life: Scientific Perspectives for the 21st Century* (K. Toriyama, KL Heong, and B. Hardy, Eds.), 198-201.
- Zhao, D. L., Atlin, G. N., Bastiaans, L., & Spiertz, J. H. J. 2006. Cultivar weed-competitiveness in aerobic rice: Heritability, correlated traits, and the potential for indirect selection in weed-free environments. *Crop Science*, 46(1), 372-380.

If agriculture goes
wrong, nothing
else will have a
chance to go right.

M. S. Swaminathan

BrainyQuote

Article

Phytoacoustics and its Vital Role in Plant Life

Amrit Neupane

Agriculture & Forestry University (AFU), Chitwan, Nepal

Email: amritneupane3636@gmail.com

1. Introduction

Phytoacoustics is the scientific study of sound production, perception, and responses in plants. It studies how plants detect sound and the effects of different sound frequencies and intensities on their growth and development. Living organisms use sound waves to interact with one another and understand the environment (Morales et al., 2010). Plants are often considered less advanced compared to higher animals because they solely respond to touch stimuli, while the latter possess four other sense organs. This raises the question of whether plants can produce and detect sounds (Bhandawat et al., 2022). In the past, "Green Music" was played to plants by farmers and some scientists in China and South Korea to enhance plant health and yield (Qin et al., 2003). Also, recent studies have shed light on the relationship between plants and sound waves, revealing effects on growth, development, and even protein synthesis. Furthermore, there is emerging evidence that suggests plants can produce sounds, paving the way for further exploration into their potential for acoustic communication (Chowdhury et al., 2015, Mishra et al., 2016).

2. How do plants emit sound? (Production)

In the past, it was believed that plants do not require sounds as they lack specialized organ systems for emitting, perceiving, and processing sound, but recent research using highly sensitive sound sensors has shown that plants can emit high-frequency sounds on their own (Bhandawat et al., 2022). A process known as cavitation is one of the ways that plants make sound. This process is prevalent in water-deficient conditions such as droughts. During this process, sound is emitted because of air bubbles rapidly bursting and obstructing the water transport system during transpiration pull, inducing stress in the xylem tissues (Hölttä et al., 2005). In another study, emerging maize roots emitted a distinct, spike-like sound that is not associated with cavitation (Gagliano et al., 2012). This possibly indicates that plants have diverse mechanisms for generating sound, some of which are responsive to their environments.

3. Influence of sound on plant growth (Perception)

It has long been known that certain frequencies of sound can be absorbed by plants, causing them to resonate, and that sound waves can alter a plant's cell cycle

(Frongia et al., 2020). Despite lacking specialized organs, neural networks, or brains similar to animal species, plants still possess the ability to perceive their environment, gather information through alternative methods, and make optimal responses (Lamers et al., 2020). Plants, unlike animals, are stationary and show subtle reactions often unnoticeable. Yet, they have been observed to detect sound waves through protoplasm, aiding in enhancing their growth efficiency (Ankur et al., 2016). Loud and disruptive noises are believed to deteriorate the mood and health of plants, as well as affect the blossoms. Conversely, gentle and rhythmic music is best for plant growth, flower development, and overall health; potentially by a speeded rate of growth and development (Anindita and Anshu, 2015). According to Reddy et al. (2013), Indian classical ragas positively affect the total amount of protein produced by plants including soybean, wheat, spinach, horse gram, and paddy. Musical vibrations also stimulate the germination of zest and okra seeds (Anindita and Anshu, 2015).

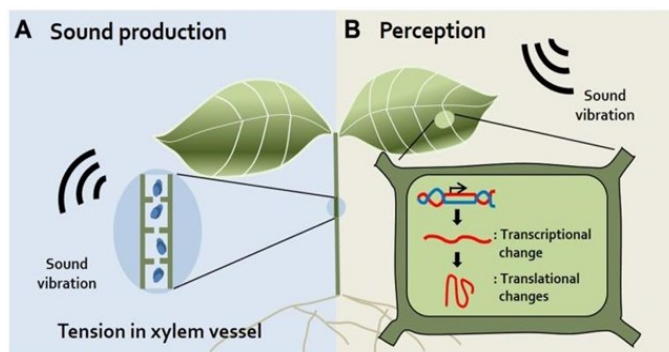


Figure 1. Sound production and Perception in plants (Source: Jung et al., 2018)

4. An experiment: how plants responses to musical sounds?

Numerous investigations have been carried out on the impact of music on plant development. Some research indicates that the germination rate of seeds can be significantly influenced by musical sound, as compared to a control group without sound (Creath et al., 2004). Nevertheless, the precise mechanism behind sound effects on plants remains unknown; therefore, it is essential to discover the process and build models to utilize sound technology for potential benefits. Patel et al. (2016) tested the hypothesis that plants are responsive

Phytoacoustics ...

to vibrations and showcased that playing Ancient Indian Traditional Chants can enhance plant growth more effectively and rapidly.

5. Methodology of the experiment (Patel et al., 2016)

- Seeds of mung beans (*Vigna radiata*) were chosen because of their rapid growth rate.
- Selected seeds were potted and placed in three separate environmental chambers (20 seeds in each chamber).
- Chambers were soundproof and covered with glass with temperature control.
- The first plant was kept in silence (VR1), the second was exposed to Sanskrit shlokas (VR2), and the third was subjected to discouraging words (VR3).
- Equal water and light energy were provided to all chambers.
- Recordings were played daily for two hours in each chamber.
- Data were recorded on shoot elongation and leaf axis length.

Table 1. Observation of the experiment (source: Patel et al., 2016)

Sound Treatments	Shoot Length	Leaf Axis
VR1	9-10 cm	1 cm (Partially open leaves)
VR2	11-13 cm	1 cm (Partially open leaves)
VR3	5-7 cm	1 cm (Closed leaves)

The observed results (Table 1.) confirmed the hypothesis with findings that Ancient Traditional Chants (VR2) enhanced the absorption of vibrations in mungbean species, resulting in significantly faster and more pronounced effects on seed growth.

6. Conclusion

The field of Phytoacoustics is rapidly growing and holds significant potential for the areas of agriculture, ecology, and plant biology. The study of the complex interaction between sound waves and plant physiology can open up new possibilities. The research conducted by Patel Ankur and his team is one of the noteworthy additions to the agricultural field, demonstrating the potential of sound interventions to improve plant growth and health. As we move forward, it is important to continue research in phytoacoustics to understand more about the mechanisms that drive plant responses to sound stimuli, including the specific frequencies, rhythms, and intensities that can promote optimal plant

growth. Studying the long-term effects of sound exposure on plant health, resilience to stress, and ecosystem dynamics is crucial for future sustainable agricultural practices and conservation efforts.

References

- Ankur, P., Sangeetha, S., & Seema, N. 2016. Effect of Sound on the growth of plant: Plants pick up the vibrations. *Asian Journal of Plant Science and Research*, 6(1), 6-9.
- Bhandawat, A., & Jayaswall, K. 2022. Biological relevance of sound in plants. *Environmental and Experimental Botany*, 200, 104919.
- Chowdhury, A. R., & Gupta, A. 2015. Effect of music on plants—an overview. *International journal of integrative sciences, innovation and technology*, 4(6), 30-34.
- Creath, K., & Schwartz, G. E. 2004. Measuring effects of music, noise, and healing energy using a seed germination bioassay. *The Journal of Alternative & Complementary Medicine*, 10(1), 113-122.
- Frongia, F., Forti, L., & Arru, L. 2020. Sound perception and its effects in plants and algae. *Plant signaling & behavior*, 15(12), 1828674.
- Gagliano, M., Mancuso, S., & Robert, D. 2012. Towards understanding plant bioacoustics. *Trends in plant science*, 17(6), 323-325.
- Hölttä, T., Vesala, T., Nikinmaa, E., Perämäki, M., Siivola, E., & Mencuccini, M. 2005. Field measurements of ultrasonic acoustic emissions and stem diameter variations. New insight into the relationship between xylem tensions and embolism. *Tree physiology*, 25(2), 237-243.
- Jung, J., Kim, S. K., Kim, J. Y., Jeong, M. J., & Ryu, C. M. 2018. Beyond chemical triggers: evidence for sound-evoked physiological reactions in plants. *Frontiers in plant science*, 9, 25.
- Lamers, J., Van Der Meer, T., & Testerink, C. 2020. How plants sense and respond to stressful environments. *Plant Physiology*, 182(4), 1624-1635.
- Mishra, R. C., Ghosh, R., & Bae, H. 2016. Plant acoustics: in the search of a sound mechanism for sound signaling in plants. *Journal of experimental botany*, 67(15), 4483-4494.
- Morales, R. F., Seong, K. M., Kim, C. S., JIN, Y. W., & MIN, K. J. 2010. Effects of auditory stimuli on the lifespan of *Drosophila melanogaster*. *Entomological Research*, 40(4), 225-228.
- Qin, Y. C., Lee, W. C., Choi, Y. C., & Kim, T. W. 2003. Biochemical and physiological changes in plants as a result of different sonic exposures. *Ultrasonics*, 41(5), 407-411.

Article

Ladybird Beetle: A Promising Biological Control Agent for Aphids

Yagnya Prasad Regmi and Ashish Marasini*

Institution: Agriculture & Forestry University (AFU), Chitwan, Nepal

**Email: regmisamyog22@gmail.com*

Introduction

Natural enemies of pests are known as biological control agents, which include parasites, predators, and pathogens (Sathe & Margaj, 2001). Predators, such as ladybirds, are free-living insects that attack numerous prey for survival. Several species of ladybird beetles (LBB) act as biological control agents for many pests including aphids (Dreistadt, 2001). There are many ways to control insect populations. For aphid control, the use of ladybird beetles is a widely-known, and largely effective method (Mushtaq et al., 2015). Some species of ladybird beetle, however, are pests for attacking vegetative parts of plants (Watts, 2004). Ladybird beetles belong to the class Insecta and the family Coccinellidae. Similar to many other insects, these beetles have an external skeleton called an exoskeleton (Minks & Harrewijn, 2008). A very distinctive shape makes it easy to identify. Importantly, the larval and adult stages of the ladybird beetle are very hostile to aphids and several other small insects and mites (Hangay and Zborowski, 2010).

Aphids are economically important pests in agriculture and forestry. The insects feed on phloem sap through their highly efficient modified mouthparts consisting of long and flexible stylets. The adaptation to phytophagy is completed by a highly ductile reproductive system capable of alternating biparental and parthenogenetic generations (Guerrieri and Digilio, 2008). This ability to reproduce asexually makes these insects highly successful from a zoological point of view. Several studies have been conducted to comprehensively control aphids using natural enemies, ladybird beetles (Hangay & Zborowski, 2010).

Food and feeding habit

Predatory ladybirds feed on several other insects including aphids, coccids, diapsids, pentatomids, and mites. Non-predatory ladybird species feed on fungi, pollen, and honeydew. The dietary breadth of predatory ladybirds results from seasonal abundance and synchrony of prey characteristics concerning potential prey and the morphology, chemistry, and behavior of the prey (Omkar, 2016). A ladybird's diet is directly related to reproduction (Hodek et al., 2012). There are only certain foods that support both the development and repro-

duction of the ladybirds (essential foods) while others are for survival (alternative foods) (Hodek et al., 2012).

Reproduction

Morphologically, ladybirds could potentially be identified by different body patterns for sexual differentiation (Omkar and Pervez, 2000; Omkar and Pathak, 2007). However, this dimorphism is uncommon among ladybirds. Nevertheless, they do show sexual dimorphism in terms of size, with females usually being larger than males. Even though they go through a similar developmental cycle, males consistently have smaller body sizes than females (Dixon, 2000). In the case of maturity, ladybird males mature earlier than females and exhibit subtle courtship (approach, watch, examine, embrace, and mount) before entering into mating (Omkar and Pervez, 2005). Ladybird eggs are bright yellow. The females lay eggs in groups of about 5 – 50, on the undersides of leaves to protect them from flying predators and the weather. Larvae undergo four instars before pupation and form adults. When the eggs first hatch, they're mostly gray or black having yellow, orange, and red spots on the back (Sarwar, 2010). Larvae grow into sizes less than 1 mm to about 1 cm in length. The large larvae may travel up to 12 m in search of prey, which grow full size in 2-3 weeks (Sarwar, 2010). The last larval instars pupate while attaching to a leaf, stem, or other surfaces and emerge as another adult ladybug (Sarwar, 2010).



Figure 1. Ladybird beetle. (Source: authors)

Ladybird Beetle ...

Ladybird beetle as a biocontrol agent for aphids

Biological control strategies involve the approach of using ladybird beetles to combat aphids either through the introduction of new species into the ecosystem or by enhancing the efficacy of existing ones. Dey (2015) outlined several bio-control strategies which are as follows:

- *Conservation of ladybird beetle population:* Resident populations of ladybird beetle are conserved or enhanced by modification of the environment or existing practices. The aim is to reduce the effect of the pest, not to yield complete control.
- *Classical control (also called inoculative control):* This involves an intentional introduction of ladybird species for permanent establishment and long-term pest control. This is the most widespread and successful approach to biological control. It is generally applied for invasive exotic pests in outdoor conditions.
- *Augmentation:* The release of extra predators (ladybird beetle) where the pest (aphid) should be controlled.
- *Inundation or mass release:* Large numbers of predators are released for immediate and short-term pest control. They often cannot maintain a population after release, so they must be re-applied to sustain the establishment and pest control benefits.
- *Seasonal inoculation:* Fewer individuals are released, and reproduction at the place of release is expected. Both generations, released and their progeny contribute to pest control for an extended period but are not a tool of permanent control.

Conclusion

Understanding pests' behavior, feeding habits, and reproductive patterns provides essential guidance for effective pest management. Ladybird beetles offer effective solutions for aphid control through various biocontrol strategies. Such strategic control including preservation, introduction, or augmentation of ladybird populations, can help mitigate aphid infestations sustainably.

References

- Dey, S. R. 2015. Ladybirds to the rescue: The aphidophagous ladybird beetle as a bio-control agent. *Beats of Natural Sciences*, 2(3), 1â.
- Dixon, A. F. G. 2000. *Insect predator-prey dynamics: ladybird beetles and biological control*. Cambridge University Press.
- Dreistadt, S. H. 2001. *Integrated pest management for floriculture and nurseries* (Vol. 3402). University of California Agriculture and Natural Resources.
- Guerrieri, E., & Digilio, M. C. 2008. Aphid-plant interactions: a review. *Journal of Plant Interactions*, 3 (4), 223-232.
- Hangay, G., & Zborowski, P. 2010. *A Guide to the Beetles of Australia*. CSIRO publishing.
- Hodek, I., Honek, A., & Van Emden, H. F. (Eds.). (2012). *Ecology and behaviour of the ladybird beetles (Coccinellidae)*. John Wiley & Sons.
- Minks, A. K., & Harrewijn, P. 2008. *Aphids: their biology, natural enemies, and control* Elsevier. New York Fruits, 63, 145-153.
- Mushtaq, S., Ahmed, N., Khan, I. A., Shah, B., Khan, A. et al. 2015. Study on the efficacy of ladybird beetle as a biological control agent against aphids (*Chaitophorus spp.*). *Journal of Entomology and Zoology Studies*, 3(6), 117-119.
- Omkar, O. 2016. *Ecofriendly Pest Management for Food Security*. Elsevier Ltd.
- Omkar, P. A., & Pervez, A. 2000. Sexual dimorphism in *Propylea dissecta* (mulsant),(Coccinellidae: Coleoptera). *J. Aphidology*, 14(1&2), 139-140.
- Omkar, O., & Shuchi Pathak, S. P. 2007. Sexual dimorphism in an aphidophagous ladybird beetle, *Coelophora saucia*. *J. Applied Biosciences*, 332: 180-181
- Omkar, & Pervez, A. 2005. Ecology of two-spotted ladybird, *Adalia bipunctata*: a review. *Journal of Applied Entomology*, 129(9-10), 465-474.
- Sarwar, M. 2016. Biological control to maintain natural densities of insects and mites by field releases of lady beetles (Coleoptera: Coccinellidae). *International Journal of Entomology and Nematology*, 2 (1), 21-26.
- Sathe, T. V., & Margaj, G. S. 2001. *Cotton pests and biocontrol agents*. Daya Books.
- Watts, B. 2004. *Beetles (Keeping Minibeasts)* 5th edition, Sea-To-Sea Publications. 29.

Contribute to Agri-Connection

Agri-Connection is an effort of connection - a means of linkage among Nepali hearts worldwide.

We invite and encourage you to send us your articles, research summary, intellectual ideas, opinions, thoughts, perspectives, memoirs, and literary creations.

Article

Social Mobilization: A Viable Approach for Alleviating Rural Poverty in South Asia

Om Prakash Singh, PhD

Agriculture and Forestry University (AFU), Chitwan, Nepal

Email: opsingh@afu.edu.np



Background

South Asia inhabits approximately 3.5% of the Earth's total land area while being home to around 24% of the world's population (World Bank, 2020). This designates a significant population density within the region comparative to its landmass. South Asia is a region recognized for its cultural diversity, comprising countries such as India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and the Maldives (United Nations, 2020). It extends an area of approximately 5 million square kilometers and is home to over 1.8 billion people, making it one of the most densely populated regions globally (United Nations, 2020). In spite of significant economic growth in recent years, South Asia continues to cope with high levels of poverty, with a considerable portion of its population living below the poverty line. This poverty is often characterized by inadequate access to basic requirements such as food, clean water, healthcare, and education.

Thriftingly, South Asia's performance varies across countries, with India being the largest economy in the region. Speedy urbanization, industrialization, and advancements in technology have contributed to economic development, but challenges such as income inequality and unemployment persist. South Asia's economies are united into the global market, with industries extending from agriculture and manufacturing to services like information technology and tourism. Though, the region also faces obstacles such as political instability, corruption, and infrastructural deficiencies, hindering its full economic potential on the world stage. In nutshell, South Asia is a culturally rich and densely populated region facing significant challenges in poverty alleviation and economic development, despite its integration into the global economy.

Social mobilization has been a crucial force driving political and socio-economic change in South Asian countries, including Nepal and India (Khan, 2015). In particular, Nepal has a long history of social mobilization, with several movements till the present-day time-course, such as the Jana Andolan and Madhesi move-

ments, playing a significant role in the country's transition to democracy and securing the rights for marginalized groups (Shrestha, 2018). Despite many challenges faced by South Asian countries, including poverty, political instability, and religious and ethnic conflicts, social mobilization remains an effective tool for bringing about desired changes. In recent years, social media has become an increasingly effective and important platform for mobilizing citizens and raising awareness of social issues (Ahmed, 2019). Civil society organizations have also played a significant role in advocating for change and holding governments and corporations accountable (Gupta, 2017). However, at the same time, it is especially important to be cautious about what we are looking for and how we use social media as a tool for social mobilization. Information disseminated on social media is often not true lacking verified sources, therefore ensuring the creditworthiness and authenticity of the news in social media, at times could be challenging.

Social mobilization has not only been instrumental in promoting social justice and political change, but this has also had a positive impact on economic development in the region (Kumar, 2019). By empowering citizens to act and pressurizing governments for accountability, social mobilization has helped to promote greater transparency, accountability, and good governance, which are all essential for smooth and equitable economic growth and development (Mahmood, 2018). As an effective tool for promoting social justice, political change, and economic development, social mobilization is essential for building a more equitable, inclusive, and sustainable society in the region. In this essay, we will explore the history, current trends, and outcomes of social mobilization activities in several countries of the South Asian region (Haque, 2020)

India

India has a long history of social mobilization, with the Indian independence movement being one of the most prominent examples (Gupta, 2016). Today, social mobilization in India is perpetuated in many forms, includ-

Social Mobilization ...

ing protests, social media campaigns, and civil society organizations. In recent years, social mobilization has had a significant impact in advancing women's rights in the country (Sharma, 2019). The #MeToo movement, which gained great traction across India in 2018, led a successful way to the legislation of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act in 2013 (Sinha, 2020). The movement also led to the resignation of several high-profile individuals, accused of sexual misconduct. Civil society organizations, such as the People's Union for Civil Liberties and the Centre for Social Justice, have been instrumental in advocating for human rights, social justice, and environmental protection in India (Reddy, 2017). The Centre for Social Justice, for instance, has worked to ensure that marginalized communities have access to basic amenities like drinking water and sanitation (Kumar, 2018).

Pakistan

Social mobilization has shaped Pakistan's political and social landscape. The Pakistan Movement, which led to the country's independence from British India in 1947, is a prominent example of social mobilization (Khan, 2015). Today, social mobilization in Pakistan is leveraged to address issues like corruption, violence against women, and religious extremism. The Aurat March, an annual women's rights march held in major cities across the country, is an example of a successful social mobilization campaign (Malik, 2019). The march helped raise awareness about issues of gender-based pay gaps, domestic violence, and women's participation in politics. Civil society organizations, such as the Human Rights Commission of Pakistan and the Aurat Foundation, have been instrumental in advocating for human rights and social justice in the country (Ahmed, 2018). The Human Rights Commission of Pakistan has documented human rights abuses in the country and holds the government accountable for its actions in such regards (Raza, 2020).

Bangladesh

Social mobilization has been a critical driver of political and social changes in Bangladesh. The country's movement for independence from Pakistan in 1971 was a prominent example of social mobilization (Rahman, 2017). Today, social mobilization in Bangladesh is popularly exercised to address climate change, women's empowerment, and human rights issues. The Bangladesh Centre for Advanced Studies has worked to promote sustainable development and address the impacts of climate change on vulnerable communities (Hossain, 2019). The student-led protests demanding better road safety and sound governance in 2018, including the recent protests on sexual violence against women, are ex-

amples of successful social mobilization campaigns (Islam, 2020). Such protests have increased awareness on issues related to road safety, gender-based violence, and good governance. Civil society organizations, such as the Bangladesh Centre for Advanced Studies and the Ain o Salish Kendra, have been pivotal in advocating for environmental protection, human rights, and social justice in the country (Kabir, 2018).

Sri Lanka

The Samurdhi Program was introduced in Sri Lanka in 1995 as a poverty alleviation program that aimed to uplift the living standards of the poor through a range of activities including income generation, skills development, and social welfare services (Samurdhi Authority, 2017). The program provided support to around 1.4 million households across the country, with a focus on empowering women and marginalized communities (Jayaweera, 2018). The success of the program is evident from the fact that poverty incidence declined from 26.1% in 1995 to 6.7% in 2016 (Department of Census and Statistics, Sri Lanka).

The Mahaweli Development Program, likewise, was initiated in 1978 to develop the Mahaweli River basin in Sri Lanka (Gunaratne, 2010). The program focused on providing irrigation facilities, hydroelectric power, and settlement opportunities to people in the region. It also provided training and support for small and medium enterprises, leading to a growth in income levels and a reduction in poverty rates.

Overall, these programs demonstrated how social mobilization can be an effective tool for poverty alleviation and better development. Social mobilization towards empowering marginalized communities, promoting collective decision-making actions and resource management, and providing access to basic services and employment opportunities, will likely lead to significant improvements in socio-economic conditions in Sri Lanka. While social mobilization is not a solution for all economic challenges, it can contribute to the country's recovery by promoting inclusive development and people's participation.

Nepal

Social mobilization in Nepal has been catered to seeking political and social changes since the 1950s. The pro-democracy movement of the 1990s, which led to the restoration of democracy, was a significant social mobilization campaign (Adhikari, 2015). Today, social mobilization in Nepal has steered in various capacities and means to address issues like corruption, human rights abuses, and environmental protection (Bhattarai, 2018). The recent campaigns against the practice of chhau-padi and child marriage are examples of positive social mobilization campaigns (Pant et al., 2019). The

Social Mobilization ...

campaigns have helped raise awareness about traditional ill-practices and gender equality. Civil society organizations, such as the Informal Sector Service Centre and the National Human Rights Commission, have been active in advocating for human rights and social justice for deprived people (Dhakal, 2017). The Informal Sector Service Centre has worked effectively to largely achieve its purpose (Thapa, 2020).

Besides, social mobilization has played a significant role in poverty alleviation in rural Nepal. With the positive role of social mobilization, communities have been able to come together to identify their problems, find solutions, and take suitable actions (Shrestha, 2018). The then Government of Nepal had identified poverty reduction as a top priority and has recognized social mobilization as a key strategy towards this goal (Government of Nepal, 2016). This approach aimed to empower individuals economically, socially, and politically, together promoting good governance through increased participation, equity, transparency, and accountability. The government plans to extend social mobilization throughout the country, with experiences gained in this field that would serve as a guide for future efforts.

One such successful initiative is the South Asia Poverty Alleviation Program (SAPAP), which developed a decentralization-based holistic model of social mobilization in 1994 (Sharma, 2015). This model has been widely replicated throughout the country and has received positive feedback from local and national level bodies for its effectiveness in improving the quality of life in rural and urban areas of Nepal. Among many models used in the past for alleviating rural poverty in Nepal, the Community Development Programme (CDP) for poverty alleviation was proven remarkably effective in the prevailing scenario, which was also based on the South Asia Poverty Alleviation Program (SAPAP) (Thapa, 2017). The SAPAP model was designed to decentralize decision-making processes and increase the participation of marginalized communities in the local development process. The CDP was one of the programs that adopted this model, and it aimed to improve the socio-economic conditions of rural communities through the promotion of community development and participatory approaches. The CDP has been recognized for its success in reducing poverty and improving the quality of life for marginalized communities.

The CDP was initiated in the mid-1990s to reduce poverty in rural areas of Nepal (Government of Nepal, 2018). The program focused on the formation of community-based organizations and the promotion of social mobilization to encourage collective action towards

poverty alleviation. Under the CDP, communities were encouraged to form self-help groups and cooperatives to increase their access to resources and to develop income-generating activities. The program also promoted community-led initiatives for physical infrastructure development such as schools, health clinics, and roads. Social mobilization was a key component of the CDP, as it helped to build community ownership and meaningful participation in the program. Communities were encouraged to identify their problems and to find solutions. The program also provided capacity building training and support to community members to cope with the problems, seek solutions and implement them.

A study by the World Bank found that the program led to an increase in household income, improved access to social services, and an increase in the number of community-led initiatives for poverty reduction (World Bank, 2019). The study also reported an increased participation of women in community-based organizations and decision-making processes.

In addition to the CDP, social mobilization has also been used to promote sustainable agriculture and natural resource management in rural Nepal. The Federation of Community Forestry Users Nepal (FECOFUN) is an example of a successful social mobilization campaign that has promoted community forestry management in Nepal (FECOFUN, 2020). FECOFUN has helped to build community-based organizations for the management and preservation of forest resources, which has led to an increase in forest cover while improving the community's livelihoods.

Conclusion

Social mobilization has played a critical role in poverty alleviation in rural Nepal. Rural Nepal is characterized by scenic landscapes and traditional villages, where agriculture serves as the primary livelihood (Central Bureau of Statistics Nepal, 2021). However, rural areas face challenges such as limited access to basic services like healthcare and education (World Bank, 2020). Infrastructure deficiencies, including poor roads and lack of electricity, further hinder development (Government of Nepal, 2019). Additionally, issues like poverty, food insecurity, and vulnerability to natural disasters persist (United Nations Nepal, 2020). Programs like the CDP and initiatives like the promotion of community forestry management have been successful in reducing poverty, improving access to social services, and promoting sustainable development in rural areas of Nepal. By promoting community ownership and participation, social mobilization has empowered communities to take action towards their development and to improve their overall livelihoods.

Social Mobilization ...

References

- Adhikari, R. 2015. Pro-democracy movement in Nepal: A historical perspective. *Journal of Nepali Studies*, 12 (2), 145-163.
- Ahmed, S. 2018. Role of civil society organizations in promoting human rights in Pakistan. *Pakistan Journal of Human Rights*, 5(1), 78-92.
- Ahmed, T. 2019. The impact of social media on social mobilization: A case study of Bangladesh. *Journal of Social Media Studies*, 7(2), 210-225.
- Bhattarai, A. 2018. Social mobilization for environmental protection in Nepal: Challenges and opportunities. *Environmental Activism*, 15(3), 321-335.
- Central Bureau of Statistics Nepal. 2021. *Statistical Yearbook of Nepal 2021*. Kathmandu, Nepal: Government of Nepal.
- Department of Census and Statistics, Sri Lanka. 2016. *Household Income and Expenditure Survey 2016*. Colombo, Sri Lanka: Department of Census and Statistics.
- Dhakal, R. 2017. Role of civil society in promoting human rights in Nepal. *Nepali Journal of Human Rights*, 4(2), 89-104.
- FECOFUN. 2020. *Annual Report 2020: Promoting Community Forestry Management*. Kathmandu, Nepal: FECOFUN.
- Government of Nepal. 2016. *National Poverty Reduction Strategy Paper*. Kathmandu, Nepal: Government of Nepal.
- Government of Nepal. 2018. *Community Development Programme: Annual Report 2018*. Kathmandu, Nepal: Government of Nepal.
- Government of Nepal. 2019. *Infrastructure Development Report 2019*. Kathmandu, Nepal: Government of Nepal.
- Gunaratne, S. 2010. Mahaweli Development Program: A case study in sustainable development. *Journal of Sustainable Development*, 17(2), 245-259.
- Gupta, A. 2016. Social mobilization during the Indian independence movement. *Indian Journal of History*, 23 (1), 45-59.
- Gupta, R. 2017. Civil society organizations and advocacy in India: Challenges and opportunities. *Indian Journal of Social Justice*, 14(2), 189-204.
- Haque, M. 2020. Social mobilization and economic development in South Asia. *South Asian Journal of Development*, 27(3), 301-315.
- Hossain, M. 2019. Addressing climate change through social mobilization: The case of Bangladesh. *Journal of Environmental Studies*, 8(4), 412-428.
- Islam, A. 2020. Student-led protests and social change in Bangladesh. *Asian Journal of Social Activism*, 14(1), 56-72.
- Jayaweera, A. 2018. Samurdhi Program: A pathway out of poverty in Sri Lanka. *Sri Lankan Journal of Economic Development*, 25(2), 180-195.
- Kabir, M. 2018. Ain o Salish Kendra: Promoting human rights in Bangladesh. *Bangladesh Human Rights Review*, 11(3), 310-325.
- Khan, S. 2015. Pakistan Movement and social mobilization: A historical perspective. *Pakistan Studies Quarterly*, 22(4), 423-437.
- Kumar, V. 2018. People's Union for Civil Liberties: Advocating for human rights in India. *Indian Journal of Civil Liberties*, 15(3), 278-293.
- Kumar, S. 2019. Role of social mobilization in economic development: Evidence from South Asia. *South Asian Economic Review*, 36(4), 401-415.
- Malik, F. 2019. Aurat March: Women's rights mobilization in Pakistan. *Pakistan Journal of Gender Studies*, 6 (2), 145-160.
- Mahmood, R. 2018. Social mobilization and good governance in South Asia. *South Asian Journal of Governance*, 14(1), 89-104.
- Pant, B., et al. 2019. Chhaupadi eradication campaign in Nepal: A community-based approach. *Nepali Journal of Social Welfare*, 6(2), 201-215.
- Rahman, M. 2017. Bangladesh independence movement: Lessons learned and challenges ahead. *Journal of Bangladesh Studies*, 14(3), 278-292.
- Raza, S. 2020. Human rights advocacy in Pakistan: Challenges and prospects. *Pakistan Journal of Social Justice*, 17(1), 56-71.
- Reddy, K. 2017. People's Union for Civil Liberties: Advocating for social justice in India. *Indian Journal of Social Justice*, 14(4), 398-412.
- Sharma, A. 2015. South Asia Poverty Alleviation Program: A case study of rural development in Nepal. *Journal of Development Studies*, 22(3), 245-259.
- Sharma, S. 2019. #MeToo movement and women's rights legislation in India. *Indian Journal of Gender Studies*, 16(2), 189-204.
- Shrestha, N. 2018. Jana Andolan and social mobilization in Nepal: Lessons from history. *Nepali Journal of Political Science*, 15(1), 78-92.
- Sinha, R. 2020. Social media and social mobilization: Implications for development in South Asia. *South Asian Development Review*, 27(4), 412-428.
- Samurdhi Authority. 2017. <http://www.samurdhi.gov.lk/web/index.php?lang=en>. (9/27/2023)
- Thapa, B. 2017. Role of South Asia Poverty Alleviation Program in community development: A case study of Nepal. *Nepali Journal of Development Studies*, 14(2), 145-160.
- Thapa, K. 2020. Informal Sector Service Centre: Promoting human rights in Nepal. *Nepali Journal of Human Rights*, 7(1), 78-92.
- United Nations. 2020. *Sustainable Development Goals Progress Report 2020: Nepal*. New York, NY.
- World Bank. 2019. *Community Development Program Impact Assessment Report*. Washington, D.C.
- World Bank. 2020. *Nepal Development Report 2020: Building Resilience for Sustainable Development*. Washington, D.C.

कृषि कविता

- सुबोध अधिकारी



कृषक र कर्मको फल

धेरै सुनेको, कर्मको फल मिठो हुन्छ भन्छन्,
तर आफूले त्यो कुन फल हो कुन्नि ?
चारख खोज्दा खोज्दै जीवन जान लाग्यो ।
हुन त कर्म पनि थरीथरीका होलान्,
कुन कुन कर्मका फल मिठा ?
कुन कुन कर्मका फल नमिठा ?
खै, के हो छुट्याउने आधार ?
अनि कसले हो यो निष्पक्ष रुपमा छुट्याउने ?

हुन त आफू कृषिजन्य अन्न र फलफूल उब्जाउ गर्ने मान्छे,
के पो गर्नु र अरु कर्मका फलका कुरा ।
मेरै उमेरको छिमेकी काजीको छोरा शुक्र
खेतीपाती गर्न छोडी बेलैमा सदरमुकाम झर्यो
खान त सधैं मीठै मन पथर्यो उसलाई
तर
आफै खेतबारीमा काम गरी अन्न उब्जाउन मन थिएन
अरुले काम गरेको पनि घृणा भावले हेथर्यो ऊ
अनि हामीलाई भन्थ्यो,
तिमीहरू फोहोरी, कस्तो पसिना गन्हाउने
दिनभरि काम गरे पनि बेलुका खान धौं-धौं हुने
गर्नु छैन मलाई त्यो दुःख ।

त्यतिबेला हाम्रो अवस्था उस्तै भनेको जस्तै थियो
श्रम पसिना अनुरूप जीवन चर्चा कठिन नै थियो
शुक्र लगायत मेरा धेरै नै दौंतरीहरू सहर पसे पनि
आफू कर्मको फल मिठो हुने लोभमा
कृषि क्रान्तिबाटै आफ्नो परिवार पाल्दै
अनि शुक्र जस्ता सहरबासी धेरैको जीवन धान्ने
र अन्न आहार पुर्याउने
इच्छा र आकांक्षा बोकी गाउँमै संघर्ष गरिरहे ।
तर खै कर्म गर्न जानिएन कि ?
अरूका कुरा मानिएन कि ?
फल छान्न र समयमा टिप्न छुट्यो कि?
फलको स्वाद लिने जिब्रो नै टुट्यो कि?
मलाई त कर्मको फल मिठो हुनै सकेन ।

न उपभोक्ताले बुझे
न सरकार,
न गैर सरकारी संस्थाहरूले बुझे
न अरु सरोकारवालाहरूले नै बुझे
कि,
अन्न सबैलाई अनिवार्य चाहिन्छ
तर त्यो उत्पादन गर्न धेरैलाई मन पर्दैन
किनकी,
अन्न उत्पादन गर्न अरु जस्तो सजिलो हुन्न ।

कति विपत्तिहरू,
बेमौसमी झरी वा लामा अत्यास लाग्दा खडेरीहरू,
कहिले अत्यधिक तापक्रम वा कहिले शीतलहरहरू
रोगव्याधि र अनियन्त्रित झारपातहरू,
किरा, र मुसा लगायत अन्य हानिकारक जीवहरू

लगानी नउठ्ने अन्न भाउहरू,
बेलगाम बजार र ऋणका भारहरू
अभाव अभाव छन् खेतीपातीमा काम गर्ने परिश्रमी हातहरू
न त छन् भने जस्तो कृषि सामग्री र औजारहरू
न कुलो र सिँचाइ,
न बिउ-बिजनहरू
न विकास मल वा हानिकारक जीव मार्ने विषादीहरू ।

अनि कुन फल फलाउने ?
कसरी कस्ता फलहरू फलाउने ?
अनि कुन कर्मको फल हो मिठो हुने ?
कुन फल हो कुन्नि त्यो?
खै कर्म गर्न जानिएन कि?
अरूका कुरा मानिएन कि?
मलाई त कर्मको फल मिठो हुनै सकेन
खै मिठो हुनै सकेन ।

(डा. सुबोध अधिकारी यूनिभर्सिटी अफ आयडाहोमा कार्यरत हुनुहुन्छ ।)

Association of Nepalese Agricultural Professionals of Americas (NAPA)

E-mail: napa@napaamericas.org; Website: www.napaamericas.org