

Quarterly Newsletter

AGRI-CONNECTION

June 2021 | Volume 6, Issue 2



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"जननी जन्मभूमिश्च स्वर्गादपि गरीयसी"



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PROSPERITY THROUGH AGRICULTURAL TRANSFORMATION !

Message from the President



Dr. Megha N. Parajulee, NAPA President

Dear members and NAPA global friends,

It is with much pride that I welcome you to **NAPA's 20th Issue of the Quarterly Newsletter, *Agri-Connection***. What a beautiful and consistent publication it has been since its inception in September 2016. Its consistency, quality, impact, and public outreach have made *Agri-Connection* the mouthpiece of our organization. Please join me in congratulating all three exceptional editorial boards and respective Editors-In-Chief (Dr. Ramesh Khanal, 2016-2018; Dr. Nityananda Khanal, 2018-2020; and Dr. Sushil Thapa, 2020-current) for their immense service in delivering this highly professional newsletter to our members and exceeding member expectations. I invite all of you to celebrate this success and enjoy yet another history-setting issue which highlights the 2020 Annual General Meeting (AGM) summary report (p. 2), expectation-breaking Endowment Fund pledge (p. 6), partnership with the National Innovation Center to fight against the COVID-19 pandemic in Nepal (p. 10), two impactful webinar sessions, scientific articles, and continuity to the entrepreneur and NAPA member recognition series. Another significant achievement of this trimester is the publication of Volume 3 (Issue 1) of *Global Journal of Agricultural and Allied Sciences* (GJAAS). The NAPA Executive Committee has approved the proposal to revamp the GJAAS publication and management structure. Beginning Volume 4, i) the review process will follow a *Subject Editor* model, ii) two subject editors will be selected for each subject area and a tenure system (e.g., 2 years) will be employed for editorial board members, and iii) the entire publication process from manuscript submission to final production will be online. NAPA will publish two journal issues per year (June and December) to make a set routine of publication moving forward. The publication has been free of charge until now, but publication fees will be considered in the future.

The Research Mini-Grant (RMG) program (NAPA-sponsored research funding and advisory service) during the 2020-2022 cycle has focused on capacity-building of undergraduate students through research and training. The RMG program is NAPA's one of the flagship programs that invests in preparing the next generation of young scientists, professionals, policymakers, and entrepreneurs. Notably, NAPA has funded 16 proposals across a wide area of agricultural and allied disciplines. Despite the COVID-19 pandemic, most RMG projects are making good progress; a few have already completed the data collection. In addition to monitoring research projects and coordinating advisory activities, Research and Capacity Building Committee (RCBC), which oversees the RMG program, organized a series of virtual workshops on research methodology, research ethics, and data analysis for grant recipients.

I proudly report that NAPA's monumental advancement in the organization's vision for program sustainability through an enhanced effort in revamping the NAPA Endowment program has been enthusiastically supported by our members. Even more exciting is that ~15% of our Endowment Fund donors are non-members! The Endowment Fund Advisory Board (EFAB) is congratulated for its hard work and success; our current total endowment fund is ~\$100,000, including pledged amounts up to a 10-year horizon. We are grateful to all generous donors who have helped us surpass our fundraising goal, and we believe the active fundraising of EFAB has just begun! I encourage and invite you to join this effort for organizational solidarity; no amount is too small in this campaign.

In closing, I would like to thank all NAPA members for engaging with NAPA activities, volunteering on committees, and supporting the NAPA vision. I continue to urge all of you to connect, advocate, engage, and contribute to move NAPA forward. The Executive Committee is in the process of developing plans for the Third Biennial International Scientific Conference (May 28-30, 2022) for an onsite meeting in Atlanta, Georgia. I hope that you are as excited as I am about the prospect of onsite meeting next May and volunteer to engage with all aspects of conference planning. I wish you all a very safe and productive summer!

Editorial

As the world wrestles with the unimaginable scale of the pandemic's toll, we start Agri-Connection 6(2) by remembering those individuals who have lost their lives, are in a critical phase, or are recuperating from the COVID-19. We would also like to convey a special thanks to healthcare providers and all the brave heroes on the front lines for their persisting dedication, endurance, and kindness amid uncertainty.

The current issue is mostly focused on the NAPA Annual General Meeting (AGM) held virtually on May 29, 2021 and the annual reports prepared by NAPA committees. Two important webinars focusing on the prospects of a controlled environmental hydroponic system and agricultural transformation in Nepal are summarized. This issue also showcases NAPA's initiatives and achievements in organizational development, networking, capacity building, and charitable activities.

Our new embellishments, "Agri-Connection through my eyes" and "KidsZone" are believed to be exhilarating for our readers. We also carry on our newest efforts - a featured article and a featured entrepreneur in Nepal. In addition, articles on the agricultural plan, policies, and strategies in Nepal, impacts of climate change in smallholder agriculture, and the poultry production in Nepal make this issue overwhelmingly worthwhile to read.

Please be a part of Agri-Connection by reading, writing, and sharing your feedback.

AGRI-CONNECTION

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Editor



Dr. Sushil Thapa
Editor-in-Chief



Mr. Tikaram Wagle
Nepali Editing



Dr. Sita Thapa
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Mr. Sanjok Poudel
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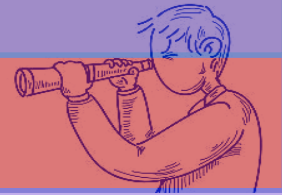
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Agri-Connection Editorial Board invites and encourages you to send us your articles, intellectual ideas, opinions, thoughts, perspectives, memoirs, and literary creations.

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OP-ED

Agri-Connection through My Eyes**- Dr. Nityananda Khanal, former Editor-in-Chief**

The Association of Nepalese Agricultural Professionals of Americas (NAPA) aspires to be a global player towards sustainable agriculture, a salubrious environment, and prosperous society. Agri-Connection newsletter is a vehicle of bringing out NAPA's activities, achievements, announcements, intellectual, and literary creativities, and sharing tears of consolation and cheers of success among the members.

In a short period since its inception in 2016, the NAPA has come a long way in pursuit of its mission, while Agri-Connection has also continued bettering in readers' taste. The newsletter in hand has come to us as the 20th issue since the publication of its inaugural issue in September 2016. I have witnessed the evolution of this newsletter as a reader since its initial days, and as a leader steering the publication of ten issues from 2018 to 2020, and as a reader again thenceforth. Now, I have the privilege of writing my reflection on it. Thank you, Dr. Sushil Thapa, incumbent editor-in-chief of Agri-Connection, for inviting me to write how I see Agri-Connection evolving.

The founding editorial board comprising Drs. Ramesh C. Khanal (Editor-in-Chief), Sanjay Lamsal (Editor), and Toya Nath Baral (Editor) deserve an ovation for their dedicated efforts in bringing out the initial seven informative issues of this newsletter series. The inaugural issue presented a comprehensive coverage of content, including NAPA's brief history and its outreach in Nepal.

Following a significant milestone of NAPA hosting the First Biennial Conference in Oklahoma City on May 26-27, 2018, I was entrusted as editor-in-chief of the newsletter. The editorial team comprising Drs. Ananta Acharya, Mukti Ghimire, Sanjok Poudel, Shailes Bhattarai, and I brought out a special volume (Volume 3, Issue 2 & 3) as the first shared effort featuring the conference highlights and a brief account of NAPA's initiatives and achievements made on the aspects of organizational development, networking, publication, webinars, scholarships, distance education, and charitable activities thus far. As in the past, agriculture-related articles, pertinent announcements, news, and literary collections remained as the continued features in the volume. From the first issue of 2019 (Volume 4, Issue 1), Agri-Connection also started featuring a NAPA member who had made an outstanding contribution to the organization. After supporting the publication of four issues of the newsletter, Drs. Ananta Acharya and Mukti Ghimire had to take other responsibilities in the NAPA and were replaced by Drs. Sushil Thapa and Romy Das Karna as editors. Two other editors Sanjok Poudel

and Shailes Bhattarai continued serving in the editorial board led by Dr. Nityananda Khanal till the publication of the 17th issue (Volume 5, Issue 2 & 3). We were also privileged to have excellent Nepali language editing support from Mr. Tikaram Wagle. The members of the reformed editorial board peer-reviewed all submissions by turns and diversified the content of the newsletter with additional themes and photo features, and attempted to introduce newer tastes in the presentation layout in each volume. It was a great pleasure to work with enthusiastic, intellectual, and courteous colleagues who dedicated their time and effort to publishing high-quality newsletters. Over the two-year term from 2018 to 2020, we successfully brought out 10 issues of the newsletter.

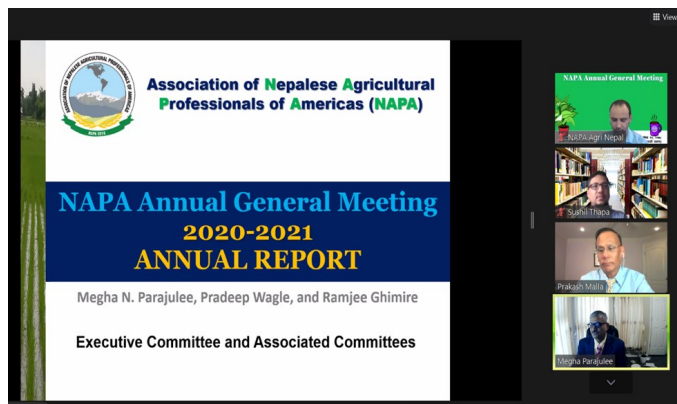
I take this opportunity to extend my sincere thanks to the members of the preceding editorial board who handed down an exemplary legacy and the past editorial board members of the Agri-Connection who provided their expertise and generous support to carry the legacy on in my leadership. I am also thankful to the Past President Dr. Lila B. Karki, current President Dr. Megha N. Parajulee, and Vice President Dr. Pradeep Wagle for being a constant source of encouragement, and support during my tenure as editor-in-chief, without which it would not be possible to realize the achievement.

It was an immense pride for me to pass the torch on to the new Editor-in-Chief, Dr. Sushil Thapa, for carrying on the publication of this well-relished newsletter in 2020. The five-member incumbent editorial team led by Dr. Thapa includes competent editors Drs. Prakriti Bista, Sita Thapa, and Mr. Sanjok Poudel, supported by Mr. Tikaram Wagle for Nepali editing. The current issue of the newsletter is the third one in the series the editorial team is presenting to its growing audiences. All three issues show a trend of further diversification of the content and enhancement of presentation layout. Inclusion of KidsZone, opinion article from the past recipient of Research Mini-Grant, Book Review, Featured Agri-entrepreneur of the Quarter, and "Agri-Connection through My Eyes" is the novel additions to the newsletter. Kudos to the current editorial team for their innovativeness and creativity!

NAPA is a voluntary forum. The editorial function is a demanding responsibility. Only the individuals having volunteer motives can commit themselves to such tasks without tangible returns. The timely and quality work hinges on good coordination and cooperation fueled by the sense of philanthropy and humility among team members. Best wishes to the editorial team led by Sushil Thapa for their excellent team spirit!

NAPA Annual General Meeting (AGM) - 2021

NAPA organized its 6th Annual General Meeting (AGM) virtually on May 29, 2021. In the absence of General Secretary Dr. Ramjee Ghimire, Joint Secretary Dr. Dev Poudel opened the program and welcomed participants. Dr. Poudel briefly pinpointed the meeting agendas and logistics. After Dr. Poudel, President Dr. Megha N. Parajulee welcomed everyone and introduced Dr. Prakash Malla as the meeting Chairman. Dr. Malla proceeded the program with a moment of silence in the memory of those who lost their lives or are in a critical condition due to the COVID-19 pandemic in Nepal and worldwide.



Dr. Parajulee spent a few minutes highlighting the NAPA's activities during the past year (June 2020 – May 2021), including NAPA Biennial Scientific Conference 2020. He presented the annual report, the compilation of the works of various NAPA committees. In between, Treasurer, Dr. Santosh Dhakal shared the financial statements of the previous year, and the statement was approved by the meeting. At the end of his presentation, Dr. Parajulee highlighted NAPA's plans for the next year (2021 – 2022) as below and said, "I firmly believe that the state of NAPA is very strong, and it can become a significant force in shaping international agriculture if we continue to believe in its global vision and work toward achieving it."

NAPA's plan for 2021-2022:

- Host third biennial scientific conference (May 27-30, 2022; Atlanta, GA).
- Expand Endowment Fund and invest it to generate revenues.
- Continue and scale up sponsored research programs.
- Expand and empower regional committees.
- Initiate programs for senior/veteran agricultural professionals.
- Collaborate with other professional organizations.
- Initiate programs for communities and stakeholders in Americas.

- Felicitate/recognize agri-professionals.
- Publish NAPA's expert database.

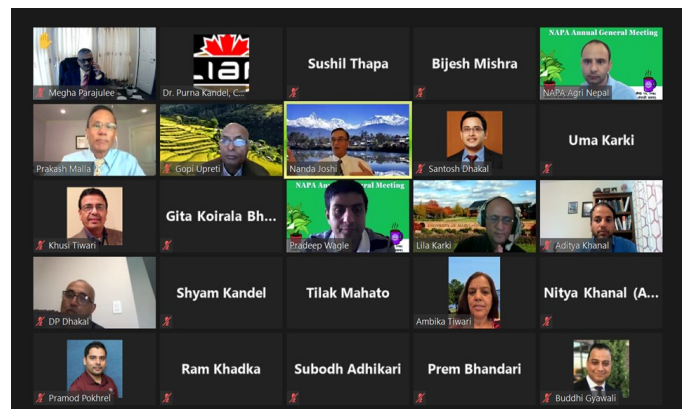
NAPA's strategy:

- Continue to share plans/programs/activities with members.
- Promote and engage more members in its activities.
- Launch innovative programs to empower members.
- Offer more student-centered activities.
- Continue engagement with Nepal's various stakeholders through research, education, outreach, and policy discussion.

The annual report presented by Dr. Parajulee

1. Executive Committee Meeting

June 7, 2020; July 19, 2020; August 16, 2020; September 23, 2020; October 31, 2020; December 20, 2020; February 28, 2021; May 7, 2021.



2. Second Biennial Conference 2020

- A total of 161 abstracts were received, 84 abstracts were presented during the conference.
- 358 scientific scholars representing 83 different institutions involved as authors/co-authors.
- Abstracts were submitted from seven countries (USA, Nepal, Nigeria, Australia, Canada, Benin Republic, and Morocco).
- There were many competitive student presentations: 19 oral, 25 poster, and 6 rapid-fire.
- There were 34 non-competitive oral and poster presentations.
- Fourteen essays were received for student essay competition.

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- Sixty-seven poems were received for the Agri-poem competition.
- Entrepreneurs roundtable, NAPA strategic roundtable, and Women in Agricultural and Allied Professions (WAAP)'s roundtables were organized.
- A total registration was 151 participants.
- \$6,462.55 donation fund was collected.
- \$2150 prize money was distributed for student oral, poster, essay writing, and rapid-fire competitions, and agri-poem recitation.
- Twenty-one participants were awarded.
- The net income to the organization from the conference was \$5941.99, which has been transferred to NAPA's Endowment Fund.

Other accomplishments:

- Launched NAPA's maiden book on Food Safety.
- Established Endowment Fund.
- Expanded Research Mini-Grant Program.
- Restructured existing committees and formed/mobilized new committees.
- Celebrated NAPA Day and Nepali New Year.
- Expanded outreach activities through the U.S. and Nepal-based media.
- Interacted with Nepal-based educational institutions.
- Presidents and other EC members chaired/participated in over 7 meetings/conferences hosted by professional organizations such as NRNA, NACA, etc.

3. Advisory Council (AC)

Three Advisory Council (AC) meetings were held in the past year; September 4, 2020, March 20, 2021, and May 5, 2021. The first was an introductory meeting. In this meeting, the AC members commented on the existing programs and also suggested the new programs. The second delved into establishing and mobilizing Endowment Fund, strategies to widen NAPA's reach and programs, and strengthening NAPA as a professional institution. The third meeting was focused on discussion on proposed amendments in by-laws. Advisory Council members offered very practical and invaluable suggestions, and NAPA EC and its subcommittees feel extremely honored to have them as AC members. Expanding programs in Nepal and other regions beyond the America, investing in Endowment Fund to generate revenues, expanding NAPA's programmatic reach among needy communities, maintaining transparency in pro-

grams, and giving priority to life members were some important suggestions AC members provided.

4. Agri-Connection Editorial Board (ACEB)

The Agri-Connection (AC) Newsletter has been a vital tool in bringing Nepali souls together all across the world. Every three months, AC showcases the testimonies of philanthropy, enthusiasm, and fidelity of the NAPA community in agricultural development. The Board is led by Dr. Sushil Thapa. In summary:

- A five-member new Editorial Board was formed in October 2020.
- Organized four meetings (several informal meetings and discussions).
- Released four issues V5.2 & 3 (combined), V5.4, and V6.1.
- The combined version was released by the team led by Dr. Nityananda Khanal.

AC regular sections

- NAPA Committees, Membership Update, Featured Member, Photographs in Action, Featured Article (*new*), Featured Agri-Entrepreneur (*new*), Opinion: AC through My Eyes (*upcoming*), KidsZone (*upcoming*)

AC evidence-based news

- Webinars, Panel Discussions, Talks, Research and Policy, NAPA Activities, Articles, Literary Creations, Scientific and Non-Scientific, Agri-Poems.

Within the short tenure of the current editorial board, AC has received several positive responses from the readers. The AC team is dedicated to the ethos of the newsletter and will strive to maintain and build on the social as well as scientific standing that it has achieved.

The newsletter can be viewed at: <https://napaamericas.org/newsletter.php>

5. Information and Technology Committee (ITC)

The ITC led by Dr. Dev Paudel performed the following activities during the last year.

- Updated NAPA website: www.napaamericas.org (82,425 visits as of May 2021).
- Updated membership form and member directory.
- Developed database of agriculture experts.
- Coordinated 2nd Biennial International Scientific Conference 2020 by preparing registration forms for the conference, developing abstract/video submission platform for talks and posters, and organizing

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videos and presentations for the conference.

- Led 5-day Applied Bioinformatics Workshop. The workshop taught cloud computing for 300 participants. All videos from the workshop have been archived.
- Coordinated presentations of the RMG Symposium.
- Archived videos from the NAPA webinar series.

6. Webinar Committee (WC)

The WC led by Dr. Khusiram Tiwari organized seven webinars in the past year. The webinars included a wide range of topics – agricultural policy issues, post-harvest losses, seed entrepreneurship, women and youth motivational talks, livestock production, and hydroponics. Excellent participation from members of public institutions, private sector professionals, students, and faculty/scientists has been very encouraging. There were about 50-80 participants in Zoom plus thousands plus views on Facebook for each live-streamed webinars. The committee has received very positive feedback from participants.

The WC invites talented speakers from diverse disciplines. Details about the webinars can be found in Agri-Connection past issues and on the NAPA website.

7. Resource and Capacity Building Committee (RCBC)

The RCBC led by Dr. Nityananda Khanal performed the following.

Research Mini-Grant (RMG) Program conference: Started in 2018, RMG Program is NAPA's flagship program. A 2-day virtual conference (June 11-12, 2020) was hosted by RCBC to share the research findings and celebrate the completion of the first NAPA-sponsored research mini-grant projects funded during 2019-2020. Twelve grant recipients presented their research findings during technical sessions representing Agricultural and Forestry University, Tribhuvan University, Kathmandu University, and Midwest Academy, and other research institutes in Nepal. Details about this program can be found in Agri-Connection, Vol. 5, Issue 2 and 3 (pages 8, 9, and 10).

NAPA 2020-2021 Research Mini-Grant Funding: NAPA received 51 proposals from Nepal for 2020-2021 funding, of which 43 were from undergraduate students from various post-secondary academic institutions. After blind-reviewed of each proposal, sixteen proposals were selected for funding. An introductory meeting on March 4, 2021, and orientation on March 11, 2021, were scheduled via Zoom. Researchers are now implanting their projects. Details about mini-grant funding

(2020-2021) can be found in Agri-Connection, volume 6, Issue 1 (pages 2 and 3), and NAAP website: <https://napaamericas.org/research-mini-grants.php>

Communication with Nepal's agricultural research, extension and education institutions:

NAPA is in regular touch with Nepal Agricultural Research Council (NARC), Institute of Agriculture and Animal Sciences (IAAS), Agriculture and Forestry University (AFU), and other research and development stakeholders in Nepal for the potential collaborations.

Advocacy role:

RCBC can advocate and provide expert support in the curriculum restructuring in agricultural education in Nepal for proper integration of agricultural and engineering education.

8. Student Coordination Committee (SCC)

During the last year, the SCC led by Ms. Shubhechhha Sharma had four meetings. The meetings identified the priority areas to focus on by SCC, including activities related to Career (e.g., technical writing, statistics, and data analysis, travel grant/awards, career counseling, job applications, networking), legal matters (e.g., maintaining F1 status, converting to J1/H1B, applying for Green Card), and Graduate School and family matters (e.g., graduate school stress management, imposter syndrome, work-life balance).

The committee co-organized the 'Careers in Agriculture' panel discussion on August 29th, 2020, with support from EC. Panelists represented employees from federal and state governments, academia (teaching, research, and extension), private industries, and non-profit organizations. The committee also co-organized a panel discussion on 'Scientific Writing and Publication' on February 13, 2021. Panelists shared their experiences on writing and publishing scientific manuscripts in authentic journals.

Future plans:

- Organize events that are directly related to students.
- Focus on the priority areas identified by SCC, including career development, legal advice, and grad school and family matters.

9. Career and Outreach Committee (COC)

The COC led by Dr. Pramod Pokhrel was formed in November 2020. The committee collected, compiled, and published graduate opportunities in the US universities on NAPA website. Further, it co-organized "NAPA Research Mini-Grant 2020 Orientation and

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Q&A Session.” The session targeted NAPA RMG 2020 applicants and prospective recipients for a successful grant application.

10. Research and Policy Brief Editorial Board (RPBEB)

The RPBEB led by Dr. Bed P. Khatiwada publishes a summary of original research, case studies, and review of the literature on various aspects of agricultural and allied sciences. Two new briefs are in progress.

11. Women in Agricultural and Allied Professions (WAAP)

The WAAP led by Ms. Gita Koirala Bhandari performed the following activities during the last year.

- August 2020 - WAAP brainstorming session discussed vision, mission, scope, and activities (10 invited participants from Nepal and the USA).
- September 2020 - WAAP Roundtable discussion at Second Biennial International Scientific Conference (7 Panelists from the USA and Canada).
- Updating the Women Agriculturist database (ongoing).
- Participated in Poem Recitation Program “Mahila Krishak” at NAPA Second Biennial Conference 2020 (published in *Krishika Suseliharu*).
- Participated in Poem Recitation Program “Krishi Bigya Chhori” at NAPA Day 2021.
- Outreach effort in disseminating NAPA’s mission to members and non-members throughout the world.

12. Publications

Book: NAPA published a book entitled “Principles and Practices of Food Security: Sustainable, Sufficient, and Safe Food for Healthy Living in Nepal.” This book fo-

cuses on various micro-and macro-level socio-economic factors and agricultural production and productivity in curbing food insecurity in Nepal. The information presented in the book is relevant to many other developing countries too. A total of 300 copies were printed. More information about the book is available at: https://www.napaamericas.org/downloads/book_food_security/Contents_food_security_book.pdf

Journal: Global Journal of Agricultural and Allied Sciences (GJAAS) is a multi-disciplinary, peer-reviewed (double-blind) international journal published by NAPA. A total of 11 papers had been published under three volumes by May 2021. Details about the journal can be viewed at: <https://gjaas.org/index.php/GJAAS>

Krishika Suseliharu: NAPA set another milestone in February 2021 by publishing an agriculture-based poetry compilation, *Krishika Suseliharu*. The editorial board was led by Ms. Ambika Tiwari. A free electronic version of the book is available at: <https://www.napaamericas.org/krishika-suseliharu.php>

13. Teaching and Student Mentoring

As a part of its distance education initiative, NAPA organized a training program on “An Introduction to Survey Data Analysis” between June 21 and September 20, 2020 (every Sunday morning). The training was facilitated by Dr. Prem Bhandari and Dr. Medani P. Bhandari in coordination with Mr. Man B. Khatri, Lecturer at Central Department of Anthropology, Tribhuvan University, Nepal. More than 100 participants from different institutions in Nepal were directly benefited from the training. Details about the training, with YouTube links, can be found in *Agri-Connection*, Volume 5, Issue 4 (page 15). In addition, several NAPA officials and members are serving as graduate student committee members, Ph.D. thesis external reviewers, and manuscript reviewers.

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NAPA 2nd Biennial Conference 2020

PROCEEDINGS



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Global Journal of Agricultural and Allied Sciences



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Global Journal of Agricultural and Allied Sciences

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14. NAPA Endowment Fund presented by Dr. Lila B. Karki

In his presentation, Dr. Karki shared the overall purpose of the Endowment Fund as “Economic and programmatic sustainability” through underpinning NAPA’s flagship programs towards achieving its overarching goal of **Global Food Security through Agricultural Transformation**. He laid out the investment plan and opportunities as given below.

- Any investment choice entails a combination of risk and return.
- Target higher return on investment for the level of risk we can tolerate.
- Bank deposits have zero risk but very low returns.
- Government treasury bonds are considered relatively risk free but have low returns.
- Stock market securities have higher returns but higher risks. Diversified securities combined to form an index entail lower risks among stock market securities (index like S&P 500, mutual funds, low & high cap combinations, multi-assets).

Table 1. As of the AGM day (May 29, 2021), the pledged amount was as follows.

Donor Type	Pledged (\$)	Contributors	%
Member	73,855	18	85
Non-Member	8,000	3	15

Sharing that EFAB plans soon plan to develop comprehensive “plans and procedure” to operate EF, come up with an investment policy, funds generation, and spending policy Dr. Karki urged everyone to contribute at least 50% now and more later. He assured that EFAB will ensure transparency of all the transactions and accounts of the EF fund through the NAPA website and other means and also will recognize and appreciate (in-person, online, conference, AGM) all the contributors.

15. Treasurer’s Report presented by Dr. Santosh Dhakal

	Regular Chase Checking Account (x6778)		PayPal Account		Chase Savings Account (x7289)	Chase Checking Account for Endowment Fund (x3203)
	Cash inflow	Cash outflow	Cash inflow	Cash outflow	Cash inflow	Cash inflow
Carryover from previous EC	\$28,882.78					
Year 2020	\$13,919.3	\$6,716.42	\$6,384.91	\$4,537.11		
Year 2021	\$10,291.37	\$32,228.04	\$3,197.96	\$3,994.97	\$25,942.01	\$6,905
Account balance	\$14,149.06		\$1,050.79		\$25,942.01	\$6,905
Overall balance	\$48,046.86					

NAPA Biennial Conference 2020 surplus (To be contributed to NAPA Endowment Fund)	\$5,941.99
Research Mini Grant (RMG) donation received	\$6,489.2
Endowment fund deposited	\$6,905
COVID Relief Fund	\$1,924.79
AMAZON-Smile donation to NAPA	\$32.88

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16. NAPA By-laws amendment presented by Dr. Pradeep Wagle

The entire By-law documents were emailed three weeks ahead of the meeting date, along with track change and feedback requested.

Polls: There was voting for the following six motions:

1. Addition of student associate membership category? Yes: 23 and No: 2

Current students of agricultural and allied areas of studies who are at good standing student's status (undergraduate or graduate) outside Americas shall meet the requirement of this member category. Student Associate member shall neither have a voting right nor can be a candidate of the Executive Committee (EC). However, they may perform roles in the specialized committees as assigned by the EC.

2. Approve endowment fund, advisory Board? Yes: 25 and No:1

An Endowment Fund Advisory Board (EFAB) shall be created to empower NAPA's financial and programmatic sustainability. A three-member EFAB shall be created, with NAPA's Founding President serving as the Chair and the Founding General Secretary as Member Secretary/Director of the Board, while the current NAPA President will be the *ex officio* Director of the Board. The Board shall expand the team by inducting each NAPA past president upon completion of his/her presidential tenure. Besides, the Board may appoint coordinators, financial analysts, and legal counselors as deemed appropriate. EFAB shall take a leading role in defining and detailing the procedures for collection, investment, and utilization of the endowment funds. The Board shall function as the authorized body for the growth and development of the endowment funds in consultation with EC, advisory council, and NAPA community as deemed necessary. The roles, responsibilities, and the terms of the EFAB members and coordinators shall be developed and approved by the EC.

3. Immediate past president in executive committee (*ex officio* member)? Yes: 28 and No: 0

- The Immediate Past President (IPP) is an automatic *ex officio* non-voting member in the subsequent EC.
- The IPP shall advise the EC on prevalent practices and other matters for the smooth transition of leadership and assists EC as needed.

4. Accept proposed changes in associate membership? Yes: 25 and No: 1

Interested individuals from outside of the Americas who hold at least an undergraduate degree in agriculture or allied areas shall meet the requirement of this member category. In addition, professionals (minimum seven years of professional experience) with an associate/diploma equivalent degree (high school + 2-3 years program) in agriculture and allied areas, and agriculture entrepreneurs/practitioners (minimum five years of experience) may qualify for associate membership with EC approval of membership application on a case-by-case basis. Associate members shall neither have a voting right nor can be a candidate of EC. However, they may perform roles in specialized committees as assigned by EC.

5. Accept vision statement? Yes or No

It was postponed. The AGM authorized three members team (Dr. Nanda Joshi, Prof. Gopi Upreti, and Dr. Pradeep Wagle) with the vote of Yes: 25 and No: 0 to come up with three vision statements within a month and share to all good standing voting-eligible NAPA members to pick the best one by voting.

6. Approve all minor changes in the by-laws? Yes: 18 and No: 0

Minor changes included English edition, including sentence structure and grammar check.

The meeting was followed by an open forum discussion. Finally, meeting Chair, Dr. Malla closed the session with remarks that NAPA has grown phenomenally, and we can do more!

[All the NAPA members, advisors, committee leads, and sponsors who contributed to organize the sixth AGM and to bring NAPA to this height are greatly appreciated for their support, and we look forward to similar support in the future.]

For past issues of Agri-Connection, please visit the link below:

<http://napaamericas.org/agri-connection.php>

NAPA Establishes Endowment Fund

NAPA's **ENDOWMENT** is the fund generated through a charitable donation of money or property from its members and well-wishers. The purpose of this endowment fund is to generate further revenue or earnings through productive investments and utilize it to achieve the vision of the organization (www.napaamericas.org) in alignment with specific purposes as indicated by the generous donors.

This endowment has been designed to keep the principal amount intact while utilizing its earnings (typically generated from investment returns, interests, and dividends) to support NAPA's programs/activities, such as professional development initiatives, teaching, research, outreach, and others. The main goal of establishing and expanding the endowment fund is to allow the underlying monetary assets to grow without withdrawals to increase in value over time. Broadly, endowment consists of but is not limited to gifts, grants, and bequests in cash and kind.

As per Advisory Council's recommendation, NAPA Executive Committee has envisioned and bolster its endowment fund that was established in 2017 for the economic and programmatic sustainability of this nascent organization. Your contribution plays a pivotal role in expanding NAPA's flagship programs and activities towards achieving its overarching goal of "Global Food Security through Agricultural Transformation."

Endowment Funds Advisory Board (EFAB)

On December 20, 2020, NAPA's Executive Committee formed a 3-member Endowment Funds Advisory Board (EFAB). The board is composed of a Chair (Founding President) and two Directors (Current President and Founding Vice President, and Founding General Secretary). The board has nominated two NAPA life members as Outreach and Investment Coordinators to execute its outreach and investment programs.



NAPA's Endowment Fund Advisory Board (EFAB) has set a goal to raise the fund of US \$100,000.00 (US \$ One Hundred Thousand) by May 2022.

The EFAB is established to play a leading role in defining and detailing the procedures for collection, investment, and utilization of endowment funds. Additionally,

the board will revise and update the procedure, policies, and modality of endowment funds as needed. The EFAB has been authorized to function for the growth and development of the endowment fund in consulta-

Advisory Board

Chair: Dr. Lila B. Karki

Director: Dr. Megha N. Parajulee

Director/General Secretary: Dr. Prem B. Bhandari

Outreach & Investment Coordinators:

tion with EC, advisory council, and NAPA community as deemed necessary.

Why donate to NAPA's endowment funds?

Overall, a donation to Endowment Funds will help achieve NAPA's overarching goal, Global Food Security through Agricultural Transformation. Specifically, the annual earnings from your donation will be utilized to implement (one or the combination of) the following activities:

- Make an impact where a difference for the transformation of agriculture is needed,
- Help needy individuals achieve their academic dreams through scholarships,
- Develop a NAPA model village and/or pilot projects,
- Leave a legacy in the field of social welfare through agricultural transformation,
- Make history by changing people's lives,
- A noble cause of changing the world gradually,
- Lead a small but impactful research and development work,
- Recognize/pay respect to your beloved ones by naming the endowment in their names, and
- Support NAPA's flagship programs and activities.

Do endowment sponsors pay taxes?

NAPA is a non-profit, a 501c (3), professional organization. The donations to NAPA endowment are tax deductible. Additionally, the donations to endowments are not taxed and the assets grow free of taxes.

Agri-Connection Editorial Board invites and encourages you to send us your articles, intellectual ideas, opinions, thoughts, perspectives, memoirs, and literary creations.

Appreciation: NAPA's Endowment Fund is Growing Fast

NAPA community is growing steadily with an increasing number of members from a wide range of agricultural disciplines and geographical regions. Foreseeing its further expansion over time, it is imperative to have a system of regular funding sources to ensure continued NAPA activities. Such financial safety can be achieved via a carefully managed Endowment Fund. Endowed fund principal is not to spend; instead, the earnings from the endowment investments help the programs you choose to implement. In other words, each gift designated for endowment provides NAPA with a permanent financial support/source. Considering this fact, NAPA established Endowment Fund (<https://www.napaamericas.org/endowment.php>) in 2017, and the current EC formed an Endowment Fund Advisory Board that oversees this fund. Any NAPA members and interested generous individuals may contribute to this fund. Several NAPA members have already pledged for this endowment fund. NAPA Executive Committee and the entire NAPA community greatly appreciate the support from these generous donors (EIGHTEEN sponsors have been highlighted in this quarter). Contact: napaendowmentfund2021@gmail.com

NAPA Endowment Fund
Platinum Sponsor
Dr. Lila B. Karki
Dr. Uma Karki
Total Pledged Amount: \$12,000 (Twelve Thousand USD over 10 years)
\$1,200/year starting in 2021

NAPA Endowment Fund
Platinum Sponsor
Dr. Pradeep Wagle
Dr. Monika Ghimire
Total Pledged Amount: \$10,000 (Ten Thousand USD over 10 years)
\$1,000/year starting in 2021

NAPA Endowment Fund
Platinum Sponsor
Dr. Prakash Malla
Total Pledged Amount: \$12,000 (Twelve Thousand USD over 10 years)
\$1,200/year starting in 2021

NAPA Endowment Fund
Bronze Sponsor
Dr. Ramjee Ghimire
Mrs. Sajana Dhakal Ghimire
Total Pledged Amount: \$2,500 (Two Thousand Five Hundred USD over 5 Years)
\$500/Year Starting in 2021

NAPA Endowment Fund
Platinum Sponsor
Prof. Gopi Upreti
Mrs. Samita Upreti
Total Pledged Amount: \$12,500 (Twelve Thousand & Five Hundred USD over 11 years)
\$2,500 in 2021 & \$1,000/Year thereafter

NAPA Endowment Fund
Bronze Sponsor
Dr. Basu D. Bhandari
Mrs. Gita Koirala Bhandari
Total Pledged Amount: \$1,000 (One Thousand USD over 5 Years)
\$200/Year Starting in 2021

NAPA Endowment Fund
Gold Sponsor
Mr. Rishi Punnakhar Dhakal
Mrs. Bimala Dhakal
Total Pledged Amount: \$5,000 (Five Thousand USD over 10 Years)
\$500/year starting in 2021

NAPA Endowment Fund
Bronze Sponsor
Dr. Aditya Khanal
Total Pledged Amount: \$1,000 (One Thousand USD over 5 Years)
\$200/Year Starting in 2021

NAPA Endowment Fund
Bronze Sponsor
Mr. Prem Raja Mahat
Mrs. Kabita Mahat
Total Pledged Amount: \$2,000 (Two Thousand USD over 10 Years)
\$200/Year Starting in 2021

NAPA Endowment Fund
Bronze Sponsor
Dr. Santosh Dhakal
Dr. Shristi Ghimire
Total Pledged Amount: \$1,000 (One Thousand USD over 5 Years)
\$200/Year Starting in 2021

Appreciation: NAPA'S Endowment Fund



NAPA Endowment Fund
Bronze Sponsor
Ms. Kemika Bhandari
Total Pledged Amount: \$1,500 (One Thousand & Five Hundred USD over 10 Years)
\$150/Year Starting in 2021




NAPA Endowment Fund
Bronze Sponsor
Dr. Sushil Thapa
Er. Smriti Thapa
Total Pledged Amount: \$1,000 (One Thousand USD over 5 Years)
\$200/Year Starting in 2021



NAPA Endowment Fund
Bronze Sponsor
Dr. Narayan Khadka
Mrs. Bandana Khadka
Total Pledged Amount: \$1,000 (One Thousand USD over 10 Years)
\$100/Year Starting in 2021



NAPA Endowment Fund
Bronze Sponsor
Dr. Shyam L. Kandel
Dr. Jinita Sthapit Kandel
Total Pledged Amount: \$1,000 (One Thousand USD over 5 Years)
\$200/Year Starting in 2021



NAPA Endowment Fund
Green Sponsor
Dr. Dainik Bahadur Nepali Karki
Mrs. Kunti Devi Karki
Total Pledged Amount: \$500 (Five Hundred USD over 5 Years)
\$100/Year Starting in 2021



NAPA Endowment Fund
Green Sponsor
Dr. Nityananda Khanal
Mrs. Chandra Khanal
Total Pledged Amount: \$505 (Five Hundred & Five USD in 2021)



NAPA Endowment Fund
Green Sponsor
Dr. Nilhari Neupane
Mrs. Yashoda Rijal Neupane
Total Pledged Amount: \$500 (Five Hundred USD over 5 Years)
\$100/Year Starting in 2021



NAPA Endowment Fund
Green Sponsor
Dr. Dev Paudel
Mrs. Ashmita Guragain
Total Pledged Amount: \$500 (Five Hundred USD over 5 Years)
\$100/Year Starting in 2021

NAPA Contributes to COVID Management Fund in Nepal

Nepal has experienced a devastating wave of COVID-19, with more than 9,000 people died of the virus in the last few months. NAPA raised a total of \$2,070 (equivalent to NRs. 2,31,000) from its members and transferred it to the National Innovation Center (NIC), led by Dr. Mahabir Pun. Currently, NIC is fully focused on supporting doctors and hospitals to fight COVID-19 by providing critical medical supplies throughout the country. A total of 23 members contributed to this cause, and NAPA would like to thank all of them for their generosity.

List of contributors:

Dr. Aditya Khanal	Dr. Khusi Ram Tiwari	Dr. Pradeep Wagle	Dr. Santosh Dhakal
Mr. Arjun Chhetri	Dr. Krishna Hari Koirala	Dr. Prem B. Bhandari	Dr. Shyam Kandel
Dr. Basu Deb Bhandari	Dr. Lila B. Karki	Dr. Prem Kandel	Dr. Subodh Adhikari
Dr. Bharat Shrestha	Dr. Megha N. Parajulee	Dr. Rajen Bajgain	Dr. Sushil Thapa
Dr. Dilip Panthee	Dr. Nanda P. Joshi	Dr. Ramjee Ghimire	Mr. Tilak Mahato
Ms. Jayanti Bhusal	Dr. Nityananda Khanal	Dr. Sanjeev Joshi	

Protect yourself and others from Coronavirus Disease 2019 (COVID-19). The best way to prevent illness is to avoid being exposed to this virus.



**ENDOWMENT
FUND ADVISO-
RY BOARD
~ESTD. 2020~**

Chair
Dr. Lila B. Karki

Director
Dr. Megha N.
Parajulee

**Director/
General Secretary**
Dr. Prem B.
Bhandari

**Outreach & Invest-
ment Coordinators**
Dr. Basu D. Bhandari
Dr. Aditya R. Khanal

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 journal, Global Journal of Agriculture and Allied Sciences (GJAAS), a semi-annual book on food security, research and policy briefs, and Agri-Connection – an online quarterly newsletter.

Within a first couple of weeks of its establishment, EFAB has already received a pledge commitment of USD 96,355.00 as of June 30, 2021.

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 (EC) has established an Endowment Fund Advisory Board 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' name(s). 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 ≥\$7,000
Gold Sponsor ≥\$5,000	Silver Sponsor ≥\$3,000
Bronze Sponsor ≥\$1,000	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. Thank you in advance for your solidarity. We look forward to receiving your generous pledge for the endowment fund. We highly appreciate your continued support to NAPA. For more information, please visit: <https://www.napaamericas.org/endowment.php>.

In anticipation, **Endowment Fund Advisory Board**

NAPA'S Endowment Fund Advisory Board (EFAB), Executive Committee (EC), and the entire NAPA community greatly appreciate your generous pledge to NAPA's Endowment Fund.

NAPA Webinar Series 24 and 25

NAPA hosted two important webinars during this quarter. The 24th Webinar Session was held with **Mr. Tilak Mahato**, Research Specialist at the University of Arizona and **Mr. Arun Kafle**, Senior Horticulture Development Officer, Nepal Government. Mr. Mahto discussed the theoretical as well as technological aspects of hydroponic systems and the possibility of their adoption in small to large-scale farming. He also talked about the relevance and importance of controlled environment agriculture (CEA) in the context of less availability of arable land and water for farming and changing global climatic conditions. Mr. Kafle discussed about the current adoption of hydroponic systems in Nepal, government policies, and challenges.

The 25th Webinar Session was held with **Dr. Kalidas Subedi**, Project Leader/Study Director at the Department of Agriculture and Agri-Food Canada. Focusing on the agricultural transformation, Dr. Subedi discussed the characteristics of Nepalese agriculture, existing situations, limitations, and potentials. He highlighted key areas for agricultural transformation in Nepal including, irrigation, manufacture of chemical fertilizers, genetic improvement and seed production, commercialization of agriculture-income generation, combine soil conservation with cash/income generation, and introduction of new production technology, especially in urban and peri-urban areas. At the end, Dr. Subedi presented a 12-point summary as below.

Association of Nepalese Agricultural Professionals of Americas (NAPA) presents

NAPA Webinar Series: 24

Controlled Environment Hydroponic Agriculture: Highly Productive and Efficient System




Tilak Mahato
Research Specialist, University of Arizona, Tucson, AZ

USA Time:
May 2, 2021 (Sunday)
7:30 PM CST

Nepal Time:
May 3, 2021 (Monday)
(बैशाख १९, २०७८)
6:15 AM

Zoom: 825 3761 5286 | Facebook: www.facebook.com/napa2072

Association of Nepalese Agricultural Professionals of Americas (NAPA) presents

NAPA Webinar Series: 25

"Agricultural Transformation in Nepal: Realities and Way Forward"




Dr. Kalidas Subedi
Project Lead/ Study Director
Department of Agriculture and Agri-Food Canada, Ottawa, Canada

USA Time:
June 27, 2021 (Sunday)
7:45 PM CST

Nepal Time:
June 28, 2021 (Monday)
(आषाढ १४, २०७८)
6:30 AM

Zoom: 861 0731 9627 | Facebook: www.facebook.com/napa2072

Messages from Mr. Mahato and Mr. Kafle

- In recent days with less availability of natural resources, especially land and water, agriculture must be conducted with optimal use of these resources in a sustainable manner.
- Climate-controlled greenhouses allow for the growth of any crops, anywhere, and anytime which is not possible on the open field.
- The CEA is highly productive, efficient, and less polluting to the soil, air, and water.
- This system is also applicable in urban settings, including inside the building and rooftops.
- It greatly complements conventional soil-based agriculture and contributes to meeting the local, national, and global food demand.
- There has been an increasing demand for fresh, safe, and quality products globally, and CEA can help to meet these demands.
- The CEA can be an attractive business to new generations as it does not require heavy physical labor or working in harsh weather conditions.
- This technology has a great potential to be integrated into Nepalese agriculture.
- Policy facilitation, dedicated research unit, development of low-cost technology, and nutrient formulation facilities are required in Nepal.

Messages from Dr. Subedi

- Prosperity in Nepal is possible only through agricultural transformation.
- Strong political will, commitment, and policy interventions.
- Regulate land – agricultural, residential, industrial, forest, etc.
- Invest in irrigation/water management to all irrigable lands.
- Manufacture fertilizers and combine fertilizers with manure where possible.
- Combine irrigation and fertilizers with improved seeds.
- Concentrate cereals and cash crops in terai and foot-hills with irrigation (3 crops in a year).
- Produce niche-based cash crops; make sure the access to roads and markets.
- Promote internal/external trade and increase export competitiveness.
- Combine crop production with soil conservation.
- Judicial and reduced-risk use of agro-chemicals.
- Mechanize farming where appropriate.

The program was coordinated by a Webinar Committee Chair, Dr. Khushi Ram Tiwari, teaming up with Dr. Dilip Panthee and Mr. Maha P. Gelal.

Photographs in Action



Photograph I:

Carrot roots infested by root-knot nematode (control, left picture and treated, right picture).

Source: Sita Thapa



Photograph II:

Bales of hay serve as feed for livestock.

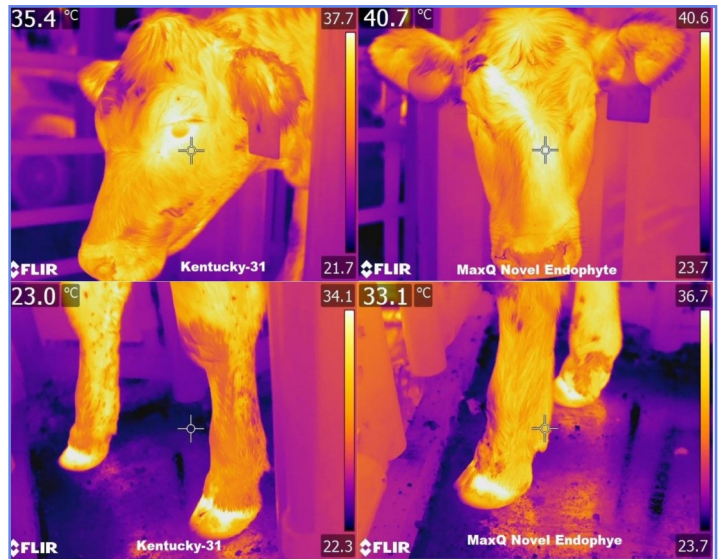
Source: Sushil Thapa



Photograph III:

Integrated livestock-wheat cropping system.

Source: Pradeep Wagle



Photograph IV:

Detecting heat stress in heifers using thermographic images.

Source: Sanjok Poudel

For past issues of Agri-Connection, please visit the link below:
<http://napaamericas.org/agri-connection.php>

Featured NAPA Member of the Quarter (April - June 2021)



Congratulations!



Ms. Ambika Tiwari



NAPA is delighted to recognize Ms. Tiwari as a Featured Member of the Quarter for her valuable contribution to the organization.



NAPA

MEMBER OF THE QUARTER

When NAPA established the first working committee, Ms. Tiwari took the role of treasurer. She also played an instrumental role in forming a committee, Nepalese Women in Agricultural and Allied Professions (WAAP) under NAPA.

Profile:

Ms. Ambika Tiwari, a Senior Research Associate at Mississippi State University (MSU), has been actively involved in NAPA since its early stage of forming. After discussions at different forums, including Nepalese Association in Southeast America (NASEA), NAPA established the first working committee, where Ms. Tiwari took the role of treasurer. During her tenure, in addition to treasurer duty, she was actively involved as a membership drive committee chair. Ms. Tiwari took the initiative to form a committee, Nepalese Women in Agricultural and Allied Professions (WAAP) under NAPA. She also worked actively in NAPA conferences as a conference committee member in 2016, 2018, and 2020, and took different leading roles such as fundraising (conference treasurer), arranging logistics, and coordinating literary (poetry) programs.

During the NAPA's 2nd International Biennial Scientific Conference 2020, Ms. Tiwari organized a three-day poetry recital program serving as a poetry program chair. Immediately after the 2020 conference, she felt the need to archive and/or preserve

the collection of invaluable poems collected. Ms. Tiwari was able to compile those agri-poems into a compendium called "*Krishika Susheli Haru*" with the help of NAPA executive committee and dedicated members of the editorial board. The editorial board published a digital version of the compendium, which might be the first agricultural poetry compendium for all agricultural associations of Nepalese origin. She envisions to publish a printed version of this maiden compendium and make it widely available through major libraries and agricultural education institutions in Nepal and beyond.

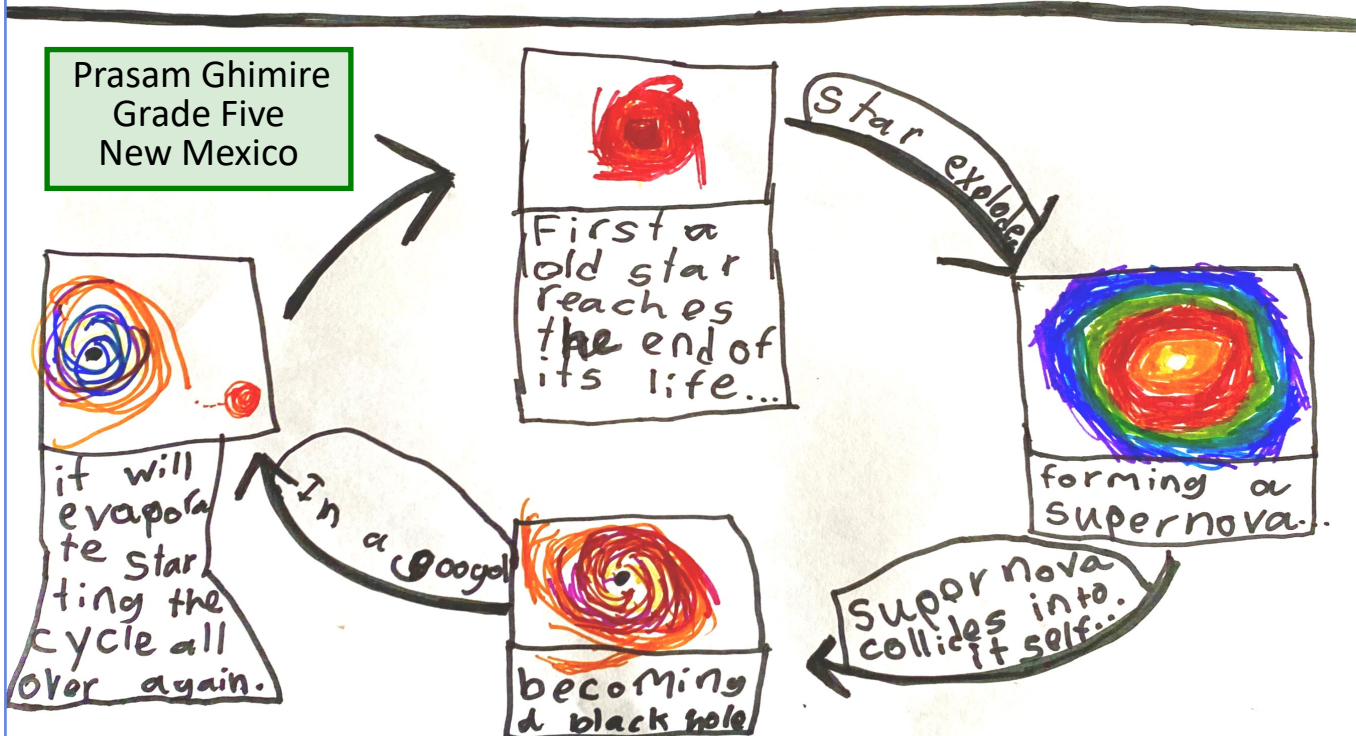
Ms. Tiwari earned her master's degree from Florida A&M University in 2013. Her work at MSU are related to water quality research, laboratory management, and scholarly activities for aquaculture. Before joining MSU, she had worked as an Environmental Specialist in the Department of Environmental Protection, Florida and Assistant Agronomist at Agronomy Division in Nepal Agriculture Research Council (NARC), Nepal.

Congratulations, Ms. Tiwari. We appreciate your contribution to the organization!

KidsZone



Life of a Black Hole



KidsZone



Please Encourage Your Kids to Participate

Dear NAPA members and AC readers,

We are very excited to include a new section, **KidsZone** in the Agri-Connection Newsletter from this issue onwards.

Please inform and encourage your kids to participate. 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:

Grade:

State/District:

KIDS TODAY, SCIENTISTS TOMORROW!

Email: agricconnection2072@gmail.com

cc: ag.sushilthapa@gmail.com

NAPA Committees

NAPA Executive Committee (2020-2022)

President

Dr. Megha N. Parajulee

Vice President

Dr. Pradeep Wagle

General Secretary

Dr. Ramjee Ghimire

Joint Secretary

Dr. Dev Paudel

Treasurer

Dr. Santosh Dhakal

Executive Members

Dr. Aditya Khanal
Ms. Gita Koirala Bhandari
Dr. Nityananda Khanal
Dr. Shyam L. Kandel
Dr. Sushil Thapa
Dr. Uma Karki

Advisory Council

Dr. Dainik B. Karki Nepali
Dr. Drona Rasali
Prof. Gopi Upreti
Dr. Ishwari P. Dhakal
Dr. Lila Karki
Dr. Nanda P. Joshi
Dr. Narayan Khadka
(Legal Advisor)
Dr. Pectambar Dahal
Dr. Prakash Malla
Dr. Suman Rimal Gautam
Dr. Yam B. Thapa

Nepal Liaison

Mr. Kiran Ojha

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Membership Drive Committee (MDC)

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Dr. Pradeep Wagle

Co-Chair

Dr. Santosh Dhakal

Student Coordination Committee (SCC)

Chair

Ms. Shubhechha Sharma

Co-Chair

Mr. Bikash Ghimire

Members

Ms. Asmita Devkota
Mr. Nabin Sedhain
Mr. Pawan Devkota
Mr. Rishi Khatri
Mr. Sudhir Yadav
Ms. Sudikshya Paudel
Mr. Sujana Bhattarai
Mr. Yogendra Raj Upadhyaya

Advisor

Dr. Santosh Dhakal

Research/Policy Brief (RPB)

Editor-in-Chief

Dr. Bed P. Khatiwada

Editors

Dr. Bhim Chaulagain
Dr. Shanta Karki

IT Committee

Chair

Dr. Dev Paudel

Career and Outreach Committee (COC)

Coordinator/Chair

Dr. Pramod Pokhrel

Members

Ms. Asmita Nagila
Mr. Bishwoyog Bhattarai
Mr. Deependra Dhakal
Mr. Dinesh Phuyal
Ms. Isha Poudel

Global Journal of Agricultural & Allied Sciences (GJAAS)

Editor-in-Chief

Dr. Megha N. Parajulee

Managing Editors

Dr. Bharat Pokharel
Dr. Pradeep Wagle

Editors

Dr. Chakra Budhathoki
Dr. Jagadish Timsina
Dr. Kalidas Subedi
Dr. Krishna P. Paudel
Dr. Nabaraj Devkota
Dr. Prem B. Bhandari
Dr. Uma Karki

Nepalese Women in Agricultural and Allied Professions (WAAP)

Coordinator

Ms. Gita Koirala Bhandari

Members

Ms. Ambika Tiwari
Dr. Kripa Dhakal

Resource and Capacity Building Committee (RCBC)

Coordinator/Chair

Dr. Nityananda Khanal

Members

Dr. Aditya Khanal
Dr. Bharat M. Shrestha
Dr. Buddhi Gyawali
Dr. Manoj Karkee
Dr. Pramod Pokhrel
Dr. Rajan Ghimire
Dr. Sharad P. Marahatta
Dr. Sonisa Sharma

Webinar/Talk Organizing Committee (TOC)

Chair

Dr. Khushi Ram Tiwari

Members

Dr. Dilip Panthee
Mr. Maha P. Gelal

NAPA Membership Update

Member Categories	Members
Founding Life	5
Regular Life + Senior life	100
General/Regular	24
Student	133
Associate Life, International	3
Associate Life, Nepal	60
Associate, International	2
Joint Life	4
Family/Joint	14

Welcome New NAPA Members on Board!

Life Members	Student Members
Dr. Bishwo N. Adhikari, Maryland Dr. Kishor K. Bhattarai, California	Bhuwan Shrestha, Tuskegee University
Associate Life Member	Bipin Neupane, North Dakota State University
Dr. Kamal Prasad Adhikari, New Zealand Mr. Arun Kafle, Nepal	Sadikshya Poudel, Mississippi State University

Stay Connected with NAPA Community



<http://napaamericas.org>



<https://www.facebook.com/NepaleseAgriculturistAmericas>

<https://www.facebook.com/napa2072>

Please renew your membership (become a life member if possible) if you have received renewal emails from NAPA.

An Appeal To Join/Renew NAPA 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 three recruiters 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



The life membership fees have been adjusted from \$500.00 to \$200.00 (\$300.00 for eligible couples) to encourage eligible members to become life member of the organization. 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. Pradeep Wagle
Vice President

Chair, Membership Drive Committee

Email: napa2072@gmail.com



Review Article

Climate Change: Impacts and Adaptation Strategies in Smallholder Agriculture

Prakiti Bista*, Sushil Thapa, Sanjok Poudel, Sita Thapa

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Introduction

Greenhouse gases (GHGs) are among the most significant drivers of climate change. Based on the current scenario of GHGs emissions, the mean global temperature is projected to increase by 1.8 – 4°C by the end of this century (IPCC, 2007a). In Nepal, the average temperature is projected to increase by 5°C over the same period, with the cascading impacts on agriculture and natural resources (NCVST, 2009). The impact of climate change and climatic variability results in increasing challenges for small-holder agriculture, mainly because of their low adaptive capacity to minimize the effect of climate change.

Soil, which holds the largest stock of terrestrial organic carbon, also releases more than 60 Gt of carbon to the atmosphere annually as carbon dioxide (CO₂). This is seven times more than the amount of CO₂ released from fossil fuel burning worldwide (IPCC, 2007b). The predicted climate change can alter soil nutrient cycling under natural as well as agricultural systems and affect net agroecosystem carbon balance.

Impacts in agriculture

Agriculture shares approximately 12% of total atmospheric contributions to global GHG emissions (Linguist et al., 2012). Within agricultural systems, CO₂, nitrous oxide (N₂O), and methane (CH₄) are the three major GHGs. Direct effects of climate change in agriculture are due to the increase in ambient CO₂ concentration and the associated rise in temperature. This phenomenon affects crop and livestock production through changes in insect pests and disease incidence, soil metabolic process, and soil water content (Liverman, 2008).

Besides crop productivity, the high climatic variability in temperature and seasonal precipitation impacts soil quality and accelerates soil respiration, and soil organic matter (SOM) loss as the rise in temperature enhances soil microbial activity and accelerates residue decomposition (Ghimire et al., 2019). In addition, poor crop, soil, and land management practices such as monocropping in sloping hills (Photo 1), intensive tillage, poorly managed farmyard manure or other soil amendments application, and residue burning can degrade soil quality and



Photo 1. Monocropping (strawberry farm) in sloping land in Nuwakot, Nepal

enhance GHG emissions (Bista et al., 2010, Bista et al., 2017a). In contrast, increasing soil carbon storage provides opportunities for mitigating climate change and achieving sustainable crop production with the dual benefit of reducing soil carbon loss to the atmosphere and improving soil health.

Unlike large-scale farms, the smallholder farmers have limited alternatives for livelihood security; hence, climate change impacts can be more pronounced for farmers as these subsistence farms are their primary source of livelihood. For example, a long-term study analyzed 40 years of climate data and 15 years of crop productivity data in Chitwan, Nepal (Paudel et al., 2014). The study showed that extreme rainfall events and increased variability in temperature increased the vulnerability of crops to biotic and abiotic stresses and altered the timing of agricultural operations, ultimately affecting crop production. Besides, poor communities are more vulnerable to climate change. A study in Jumla, Nepal, reported that changing weather patterns greatly challenged the livelihoods of the rural community experiencing resource degradation, food scarcity, lack of basic services, and increasing social inequalities (Gentle and Maraseni, 2012).

Climate Change: Impacts and Adaptation

Sustainable crop production

To minimize the impact of climate change on agriculture and achieve healthy soil and sustainable crop production, improved cropping practices are now used in developed countries. With the modification that suits local conditions, such proven techniques can be practiced in smallholder farms to mitigate climate impacts on crop production. Some of these practices include: conservation tillage, improved residue management, integration of legumes into crop rotations, use of soil amendments (e.g., manure, biochar), high-density farming (agroforestry) systems (Photo 2), and crop diversification and intensification (Bista et al., 2017b; Ghimire and Bista, 2016). High intensity tillage incorporates the residue in the field, which serves as a microbial carbon substrate releasing CO₂ to the atmosphere. In conservation tillage systems, the residue left on the surface decomposes much slower than in tilled systems. Moreover, soil management practices designed to reduce tillage intensity can improve soil properties leading to more efficient soil water and nutrient storage and reduced SOM mineralization and GHG emissions (Bista et al., 2016).



Photo 2. High-density farming/agroforestry in hills of Nuwakot, Nepal.

Adaptation strategy

In addition to the above-mentioned practices, the following adaption strategies (adapted from Paudel et al., 2014) can help small-holder farmers to mitigate climate change impact and achieve sustainable crop production:

- Adjustment in the cropping calendar and changing crop species and varieties.
- Adjusting the timing of planting/ seed sowing and other agricultural operations for short-term community capacity building.
- Switching cropping sequences/rotation.
- Rainwater harvesting and utilizing during the dry periods.
- Planned adaptation measures to cope and adjust to the altered environment.
- Conserving soil moisture through appropriate tillage methods (minimum tillage) and improving irrigation water use efficiency.
- Development of drought and flood codes and early warning systems.
- Establishment of community gene/seed banks and genetic gardens.
- Low-cost technologies that promote comprehensive risk management such as Sloping Land Agricultural Technology (SALT) for minimizing soil erosion.
- Governmental and non-governmental organizations efforts that focuses on research and development activities.
- Effective governance, strategic planning, and policies to cope with climate change and variability.

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Heartfelt Condolence!



We express our heartfelt condolence to our bereaved, NAPA General Secretary, Dr. Ramjee Ghimire for the loss of his beloved father, Hum Nath Ghimire (B.S. 1991 - 2078/02/07).
May the departed soul rest in peace!



We express our heartfelt condolence to our bereaved, NAPA life member, Dr. Prem Bhandari for the loss of his beloved mother, Sabitra Bhandari (B.S. 1991 - 2078/02/02).
May the departed soul rest in peace!



Nepal's Experiences on Implementing Developmental Plans, Policies, and Strategies

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Background

Nepal has long been trying to attain higher economic growth and sustain its development through the implementation of periodic plans and associated sectoral policies, perspective plans, development strategies, and action plans but has little success. The country has implemented nine five-year plans, five three-year plans, and one interim plan since the planned economic development process began in 1956 (National Planning Commission, 2021). Five-year plans (first-seventh) aimed to increase agricultural production and employment; develop infrastructures; attain economic stability; promote the industry, commerce, and international trade; and establish administrative and public service institutions to support economic development. The social goals of these plans were to improve health and education and encourage the equitable distribution of income. The first four development plans focused on infrastructural development to facilitate the movement of goods and services and to increase market size. In the fifth and the sixth plans, agriculture remained the top priority. The seventh plan encouraged private sector participation in the economy and targeted increasing productivity of all sectors, expanding opportunities for productive employment, and fulfilling the minimum basic needs of the people. Whenever agriculture was the focus in these plans, increasing agricultural production and productivity was one of the major objectives, and much importance was given to cereal crop production. During the period of 1961/62 to 1989/90, production of principal cereal crops increased at an average of 2.1% per annum which is attributable to the government policy of assigning top priority and subsequently funneling resources to agriculture sector.

At this time, foreign aid contributes around 66% of development funds. However, the government continually failed to use all the committed foreign aid indicating inefficiency in governance. During the same period, the total trade deficit increased 16.6% per annum due to a limited export base compared to imports. This situation happened despite considerable success in-country diversification of trade for bringing about changes in its traditional situation. From the eighth to fourteenth plan, the targeted economic growth was 4.3 to 7.2%; however, the achievement was 3.4 to 6.9%. During the same period, the agriculture sector grew 2.2 to 4.2% against the target of 2.8 to 4.7%. Economic growth in Nepal largely depends on agricultural growth (Chaudhary, 2018) and agricultural growth largely de-

pends on the rainfall (monsoon) situation (National Planning Commission, 2019). During these periodic plan periods, the economic growth was achieved at the highest level of 6.9% when the agricultural growth was also at its highest of 4.2 %. The economic growth was lowest at 2.9 %, when agricultural growth was at its lowest at 2.2 % (Cosic et al., 2017).

In addition to the periodic plans, Nepal has been implementing the following agricultural policies to augment the country's economic growth through agricultural development.

National Seed Vision (NSV) (2013-2025)
The Agriculture Perspective Plan (APP) (1995/96-2014/15)
Agricultural Mechanization Policy (2014)
Land Use Policy (2012)
Climate Change Policy (2010)
Trade Policy (2009)
Dairy Development Policy (2007)
Agriculture Biodiversity Policy (2007)
Agribusiness Promotion policy (2006)
Agriculture Biodiversity Conservation Policy (2006)
National Agriculture Policy (2004)
Fertilizer Policy (2002)
Nepal Environmental Policy and Plan of Action (1992)

Fig. 1. Agriculture and related vision, policies, and plans intended for agricultural development in Nepal.

Even though all of these policies are important and critical for Nepal's development, two stand out as these are/were believed to be giving new direction and thereby significantly speeding up agricultural growth. They are Agriculture Perspective Plan (APP) (1995/96-2014/15) and Agriculture Development Strategy (ADS).

The APP emphasized an agriculture-led growth strategy for poverty reduction and overall economic development without adverse effects on the environment. The mission was based on the rapid transformation of agriculture that would propel growth even in the non-agricultural sectors through the multiplier effects. The APP adopted a technology-driven approach with inputs such as fertilizer, irrigation, roads, electrification, and technology as its priority. It emphasized livestock, high-value crops, agribusiness, and forestry as its priority outputs.

Nepal's Experiences on Implementing

The APP's performance has been mixed. It lacked the supporting legislation and resources for implementation and faced inadequate institutional and human resources capacity. During the first 10 years of the APP, both government and donor investment in agriculture declined, and private investment was not encouraging.

Utilizing the experiences of and lessons-learned from previous plans and policies and considering the opportunities and potentiality for growth in the agriculture sector, Nepal formulated the Agricultural Development Strategy (ADS) and has been implementing it. The ADS has envisioned "A self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth and contributes to improved livelihoods and food and nutrition security" (ADB 7762-NEP, 2013). To achieve its vision, the ADS plans to accelerate agricultural growth through four strategic components: improved governance, higher productivity, profitable commercialization, and increased competitiveness. The acceleration of inclusive, sustainable, multi-sector, and connectivity-based growth is expected to result in increased food and nutrition security, poverty reduction, agricultural trade competitiveness, a higher and more equitable income of rural households, and strengthened farmers' rights. The ADS has a 20-year vision with a 10-year action plan and roadmap, including four outcomes, 35 outputs, and 232 activities needed to achieve the targets.

Issues with Agricultural Development in Nepal

The agricultural sector in Nepal is still in a developing stage. Improvement has been too little both in terms of what the country had planned to achieve and relatively to the progress made by its neighbors over the same period. Nepal's growth, both in agriculture and in the rest of the economy, has been slow. Although the outcomes and impact of ADS are yet to be seen, however, they are not encouraging.

Political instability attributed to Maoist conflict spanning 1994 to 2006 and undue political interference in governance had adverse effects on the agricultural sector. Thousands of rural farming households left their homes and farmlands and moved to the cities, mostly to Kathmandu; several thousand went abroad seeking low-paid hard labor jobs. This migration resulted in labor and investment shortages in rural areas and negatively impacted the APP implementation and the entire agricultural sector in general.

The persistent and increasing deficit in foreign trade is due to the low production of export-oriented goods and higher import of consumer goods. Over two-thirds of the foreign trade has been with India (World Bank Group, 2021). India's hegemony in trade and trade policies is another hindrance facing Nepal (Ministry of Finance, 2019). Even though Nepal aims for a high

(over 50%) share of Foreign Direct Investment in the agriculture sector, that is not happening. The Nepal Rastra Bank (2018) report shows that the FDI inflows in Nepal are substantially low compared to neighboring countries. Nepal shares only 0.01 percent of total FDI globally, while South Asia received 3.1 percent of total FDI inflows in 2016.

In this context, Nepal is implementing the fifteenth plan (2019 - 2024) aiming to increase the economic growth rate to 10.3% from the current 6.8% and achieve economic growth of 10.5% and eradicate absolute poverty by 2043. This plan's agricultural sectoral target is to bring its gross domestic product (GDP) contribution from 27.6% to 22.3% by the end of the plan period (National Planning Commission, 2020). In addition, the fifteenth plan aims to make Nepal self-sufficient in major agricultural commodities and attains an agriculture trade balance by the end of this plan period. Similarly, the plan expects to achieve the food security status from the current level of 48.2% to 80% of the family HH and intends to become a developing country by 2022, a middle-income country by 2030, and a high-income country by 2043. Based on what Nepal achieved through implementing the previous developmental plans, the above-mentioned target seems too ambitious.

Issues in Implementation of Plans

Overall, Nepal's plans and policies look ambitious; however, Nepal faces irregular and inadequate budget, has weak institutional frameworks and capacity, do not have necessary legislations facilitating implementation of plans and policies, has weak absorption capacity or has been ineffective to sufficiently spend allocated budget as proposed, faces increasing and undue hindrances and pressure from political parties, and weak accountability systems. Consequently, the targets are not achieved, and the performance, in general, is low. Since the beginning of the economic plan year 1956, the goals encapsulated in the plans could not be achieved, and the growth has not been satisfactory ever since. Further, the targets of the fifteenth plan of attaining double-digit annual economic growth seem a tough proposition. Based on the past performance of the plans to become a developing country by 2022, a middle-income country by 2030 AD, and a high-income country by 2043 AD seems an unrealistic aim.

Conclusions and Recommendations

Experiences of implementation of the fourteenth economic development plans/periodic plans, agriculture sectoral development plans, policies, and projects have shown mixed results and indicated that the goals encapsulated in the plans could not be achieved. Consequently, Nepal has not achieved much to become a prosperous and developed country.

Nepal's Experiences on Implementing

Due to the low production of export-oriented goods and higher import of consumer goods, there is a persistent and increasing deficit in foreign trade, which now has reached 38.6% (National Planning Commission (NPC, 2020).

The internal migration of people to urban centers for better security and job opportunity and outmigration of youth to gulf countries, Malaysia, or other countries searching for economic opportunity is alarmingly high.

Unhinged and unnecessary political interference in government functioning has been a hurdle to Nepal's development. Alignment and involvement of government employees, university professors, college and school teachers, students, civil society leaders, industry workers, and even farmers with the political parties and politicization of development agenda for their individual and/or personal gains have negatively affected governance systems and also the overall development.

Nepal scored 34 points (out of 100) on the 2019 Corruption Perceptions Index (Transparency International, 2020). In addition, Nepal is ranked 94 among 190 economies in the ease of doing business, i.e., based on a regulatory environment conducive to business operation (World Bank, 2020). These factors are making it difficult for Nepal to attract more FDI.

We suggest that the government must be proactive to develop need-based policies and ensure that its plans, policies, and services are implemented in time and with the spirit when they were developed. The plan of action to respond to perceived problems affecting its citizens is formulated through an iterative and participatory process, and such an action plan is adopted, implemented, and enforced by respective public agencies.

- Develop a comprehensive periodic (20 years) National Development Strategy considering the predictability of the development environment.
- Update sectoral long-term strategy, the Agricultural Development Strategy (ADS) keeping the changes governance (local, provincial, federal) system. Revise and/or update existing policies in line with ADS and complement ADS' implementation.
- Develop policies as needed for economically important commodities or services. In accordance with the National Development Strategy, develop sectoral/sub sectoral master plan (e.g., Livestock Master Plan, Horticulture Master Plan, etc.) outlining projects for implementation, both through donor's support and its resources.
- Make sure infrastructural, communication, educational, health, and sanitation provisions are in place before launching economic development program.
- Make sufficient budgetary provision for the project implementation. Persuade donors to invest and

work in harmony with the national policies.

- Ensure to avoid duplication both in the area and in the program.
- Ensure administrative, logistic, and intuitional requirements for project implementation during project finalization so that the project management need not engage in such formalities again and again.
- Mobilize competent project team to implement project activities.
- Avoid undue political interference of any form, any degree at any project during implementation. Provide working autonomy to the project management team within an established framework.
- Stop allocating and distributing billions of rupees from national coffins through members of the parliament (House of Representatives and National Assembly). If not, this practice will likely trigger provincial and local level political representatives to demand the same. This practice will, in turn, become a burden to the country and create further distortion in the institutional and professional mechanism of project designing project selection, project implementation, and project monitoring and evaluation.

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Did you know?

- The map of Nepal is similar to the map of Portugal:** If the map of Nepal is turned 90 degrees clockwise, it looks very similar to the map of Portugal.
- Independent Nation:** The famous warriors in the world- “Gurkhas” are from Nepal. Having been protected by the bravest warriors of the world, Nepal does not have an Independence Day as it was never colonized by any superpowers of the world.
- Triangular Flag:** Nepal is the only country in the world with a non-rectangular flag.
- Unique Nepali Calendar:** The Nepali calendar called *Bikram Sambhat* is approximately 67 years and 8.5 months ahead of Gregorian calendar.
- Biodiversity:** In terms of biodiversity, Nepal is one of the richest countries in the world. Nepal has more than 900 species of birds, which accounts to 8.9% of the total species of birds all around the world. It has 4.2% of the world's butterfly species and 3.96% of the world's mammal species.
- Cultural Heritage:** There are dozens of World Heritage Sites categorized as Natural and Cultural World Heritage Sites in Nepal. Kathmandu valley alone has seven UNESCO's World Heritage Cultural sites within a radius of 15 kilometers.
- Mt. Everest:** Nepal has 8 out of 10 of the world's highest mountains, including the world's highest Mount Everest standing 8,848.86 meters high.
- Birthplace of Lord Buddha:** Nepal is the birthplace of the Light of Asia - Buddha. Siddhartha Gautam (Buddha) was born in 623 B.C. in Kapilvastu, Lumbini, which lies in Nepal.
- Living Goddess – Kumari:** Nepal has the only living Goddess in the world called “Kumari.” There are three different Kumari in three main cities of Kathmandu valley.
- Altitude Variation:** Nepal is the only country with altitudinal variation that ranges from 59 meters to 8,848.86 meters. Nepal holds some of the most extreme places on the earth such as the highest lake on the earth (Tilicho 4,800 meters), the highest valley on earth (Arun valley), the deepest gorges (1,200 meter) in Kaligandaki, and the tallest grassland in the world in Chitwan.

(Source: <https://trekroute.com/interesting-fun-facts-about-nepal/>)

Featured Article

Poultry Production and Poultry Vaccine Manufacture in Nepal

The poultry industry is one of the booming industries in Nepal. In the past decade, the population of chicken in Nepal increased with an average annual growth rate of 19.5%. Nepal ranks 112th and 92nd in chicken meat and egg production in the world. The investment in this sector is over US \$1.1 billion and is increasing each year. The poultry industry in Nepal contributes approximately 4% of the national gross domestic product. There are more than 320 hatcheries, 111 feed industries, and 16,000 poultry farms in Nepal, which provide direct employment opportunities to more than 150,000 people.

Despite the increase in poultry population and production, the poultry industry in Nepal faces several challenges, including the heavy reliance on the import of feed ingredients, high cost of raw materials, smuggling of poultry and poultry products through open Indian border, periodic outbreaks of endemic and emerging infectious diseases, unavailability of efficient drugs and vaccines, and inefficient marketing structure.

The World Organization for Animal Health (OIE)-listed poultry diseases, including coccidiosis, fowl pox, infectious bursal disease, Newcastle disease (ND), and avian influenza are reported every year in Nepal. Besides the OIE-listed diseases, several other diseases, including colibacillosis, mycotoxicity, and chronic respiratory diseases, are also reported from Kathmandu and other districts of Nepal. Besides the economic loss in the poultry sector by these diseases, certain poultry pathogens like the avian influenza virus and *Salmonella* and *Escherichia coli* bacteria can also cause human infections.

Vaccination can prevent the transmission of several infectious diseases in poultry. In Nepal, poultry vaccine production was started in 1968. At first, ND F1 strain, ND R2B strain, and fowlpox vaccines were produced, which were expanded to infectious bursal disease (IBD) and ND Lasota strain vaccine production by 1998. From 2008, production of the heat-stable vaccine against ND, i.e., ND I2, was started. Before 1989, the government-owned laboratory, NVPL, used to distribute vaccines free of cost to the farmers, but after that, it started to charge nominal prices. At present, there are three different laboratories producing poultry vaccines in Nepal: National Vaccine Production Laboratory (NVPL), Hester Biosciences, and Biovac Nepal.

In the year 2018/19, NVPL alone produced 15 million doses of ND F1 strain vaccine while the production was 8, 5, and 1.96 million doses for fowl pox and IBD, ND R2B and Lasota, and ND I2 vaccines. The in-

country production of poultry vaccines is not sufficient for Nepal, and hence each year, millions of doses of poultry vaccines are imported. In the year 2018/19, Nepal imported 2,378 million doses of poultry vaccines which was over 300% more than the poultry vaccine imported in 2014/2015. This data suggests that NVPL and private vaccine companies need to increase the types and quantity of poultry vaccine production within the country to reduce imports from foreign countries.

Though poultry vaccines are in use for years in Nepal, data are lacking regarding their immunogenicity and field efficacy. To be effective, vaccines should match with the field strains of pathogens. Vaccines imported from other countries may not necessarily protect against field strains of pathogens circulating in Nepal. Variations in pathogens' characteristics may also demand changes in vaccine formulations over time. However, a system to continuously monitor circulating pathogens and poultry vaccine efficacy is not available in Nepal.

The poultry industry has a significant contribution to the employment generation and economy of Nepal. However, periodic outbreaks of various poultry diseases constantly threaten this industry. Regular monitoring and surveillance of poultry diseases, adopting strict biosecurity measures, and using effective vaccines can prevent such disease outbreaks. Despite the continuous efforts of NVPL and private industries, the current in-country vaccine production is not enough to meet the demand in the poultry industry. On 25th March 2021, the government of Nepal announced itself as being self-sufficient in egg and meat production. However, more investment is necessary to understand the behavior and ecology of prevailing pathogens within the country by research and development of novel adjuvants and improved vaccine formulations and regularly monitor the field performance of commercial vaccines. Thus, making Nepal self-sufficient in poultry vaccine production in a real sense.

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Learn more about this article in:

Poudel, U., Dahal, U., and Dhakal, S. (2021). Review of Poultry Production and Poultry Vaccine Manufacture in Nepal. *Global Journal of Agricultural and Allied Sciences*, 3(1), 1-7. <https://doi.org/10.35251/gjaas.2021.001>

Featured Agri-entrepreneur of the Quarter (May – June 2021)

कृषक आवाज: गोबिन्द शर्मा



१०० देशका २४ हजार नागरिकहरूलाई पर्माकल्चरको तालिम

गोबिन्द शर्मा

अध्यक्ष, हसेरा कृषि अनुसन्धान र तालिम केन्द्र, धुलिखेल-११,
पातलेखेत, काभ्रेपलान्चोक ।

शिक्षा: एम.एस.सी. इकोलोजिकल एग्रिकल्चर, वागेनिंगेन विश्वविद्यालय,
नेदरल्यान्डस ।

सुरुवातका दिनहरू

मैले २०४९ सालको वैशाखमा रामपुरबाट कृषि स्नातक अध्ययन सकेपछि तुरुन्तै यो व्यवसाय सुरु गरेको हुँ । सुरुका दिनमा अनुभव र पुँजी दुवै नहुँदाको दुःख त छँदै थियो, परिवार र समाजलाई आफ्नो चाहना बुझाउनु अझ मुस्किलको कुरा थियो । तर आफ्नो दृढ निश्चयबाट सुरु गरेको हुनाले ती घटनाहरूले हतोत्साही बनाउने भन्दापनि रोमान्चकता चाहिँ दिए । जे अफ्ठ्यारा परे पनि तिनीहरूलाई सिक्ने अवसरको रूपमा लिँदै गएँ ।

२०४३ सालतिरको समयमा कृषि स्नातक गरिसकेपछि फेरि गाउँ फर्केर खेतीपाती गर्न थाल्नु नै ठूलो र अचम्मको कुरा थियो । फार्म सुरु गर्दा सुरुका दिनहरूमा म रायानिक मल/विषादी प्रयोग गर्दथेँ । रामपुरमा हामीले सिकेको तरिका त्यही थियो। तर केही महिना पछि नै प्रयोग गरेको विषादीले कमिला मर्दै गरेको दृश्यले चित्त दुख्यो र अब आइन्दा विषादी हाल्न बन्द गर्ने निधो गरें । आफ्नो रुचि र जानेका कुरा मिलाउँदै, आवश्यक कुरा सिक्दै गर्दै गएँ । पछि जब मैले गरेको तरिकालाई पर्माकल्चर भन्छन् र यसको अनुसरण गर्ने मान्छे संसारमा धेरै छन् भन्ने सुनें, त्यसपछि म फेरि एकपटक खुसी भएँ । बिस्तारै मैले गरेको कामको चर्चा बढेर मानिसहरू तालिमको लागि आउन थाल्नु, तालिमहरूमा राष्ट्रिय र अन्तर्राष्ट्रिय सहभागीहरू आउन थाल्नु र वि.सं. २०७६ सम्म आइपुग्दा विश्वका १०० देशका सहभागीहरूलाई पर्माकल्चर जीवन पद्धति सिकाउने अवसर पाउनु मेरो जीवनका महत्वपूर्ण घटनाक्रमहरू हुन् ।

हालको अवस्था

हाल हसेरामा ८० मौसमी बालीबिरुवा, ३८ जडिबुटी, २१ फलफूल, २७३ प्राकृतिक बोटबिरुवा, गाई, बारम्बा, कुखुरा, आदिका साथै डेढ सय भन्दा बढी स्थानीय प्रजातिका बोटबिरुवाहरूको बीउ बैंक छ। यो पर्माकल्चर फार्म भएकोले यहाँ प्रयोग गरिने प्रविधिहरू विशेष

छन् वा सामान्यतः भनिने आधुनिक प्रविधि भन्दा पृथक छन् । हरेक वर्ष पी.भी.एस. तरिकाले बीउ छान्दै बालीको जातीय सुधार गर्छौं । जमिनबाट माटो बग्न रोक्नका लागि भल निकास, १५० जति डोबिल्का र चार वटा संरक्षण पोखरी बनाएका छौं । गोठमल राम्रो बनाउन लाभदायक सूक्ष्म जीवाणुहरू प्रयोग गर्दछौं भने रोग/कीरा नियन्त्रणका लागि एकीकृत तरिका अपनाउँछौं । बालीको विकास सहजताका लागि मित्र बालीहरू मिलाएर लगाउँछौं । पानी तथा पोषणहरूलाई सकेसम्म पुनः प्रयोग गर्दछौं । सकेसम्म सरल, व्यवहारिक र पर्यावरण मैत्री प्रविधिहरूलाई प्राथमिकता दिन्छौं ।



प्रकृति र समाजसँग मिलेर जीवन जिउने चाहनाले होला मेरो बाल्यकाल देखिकै परिकल्पना यही थियो । अन्तरमनको चाहनाहरूलाई पछ्याउँदै यहाँसम्म आइपुगेको छु । हाल म अर्गानिक सर्टिफिकेसन नेपालको प्रबन्ध निर्देशक, अन्तर्राष्ट्रिय पर्माकल्चर कन्भरजेन्स काउन्सिलको कार्यसमिति सदस्य लगायत विभिन्न भूमिकामा रहनुका साथै कृषि मन्त्रालयका प्राङ्गारिक कृषि सम्बन्धी कृषाकलापहरूमा परामर्शदाताको रूपमा

१०० देशका २४ हजार नागरिकहरूलाई....

सहयोग गर्दछु । यी कामहरूमा जति व्यस्त भएपनि मलाई गाउँमै बस्न र आफैले फलाएरै खान मनपर्छ, अनि आफुले जानेको कुरा अरुलाई बताइरहन मनलाग्छ।

अहिले हाम्रो फार्ममा म आफै, श्रीमती मिठु, छोराहरू बिजान र बिबेकसँगै तीनजना अरु सहकर्मीहरू कार्यरत छौं । फार्म पूर्णतः प्राङ्गारिक छ र पर्माकल्चर तरिकाले डिजाइन गरिएको छ । २५ जना सम्मको लागि आवासीय सुविधा र ५० जना सम्मलाई खाना खाने सुविधा छ । फार्मको भान्सामा पाक्ने अधिकांश उत्पादन प्राङ्गारिक नै हुन्छ । बाहिरबाट ल्याउने पर्ने चिज पनि स्थानीय उत्पादनबाटै उपलब्ध गराउने प्रयत्न गर्दछौं । लगभग हरेक महिना नेपाली तथा अंग्रेजी भाषामा तालिमहरू संचालन हुन्छन्। देश विदेशबाट यहाँ आएर बसेर काम गर्दै सिक्न चाहने विद्यार्थी/स्वयंसेवकहरू पनि आइरहनु हुन्छ । यहाँबाट सिकेर आफ्नो ठाँउमा पर्माकल्चर अभ्यास गर्ने मानिसहरू धेरै जना हुनुहुन्छ । समग्रमा हसेरा पर्माकल्चरको अन्तर्राष्ट्रिय सिकाइ केन्द्र भएको छ ।

सफलताका श्रेणीहरू

प्रकृतिसँग नजिक रहेर उत्पादनमुलक र खुसीयाली पूर्ण जीवन जिउन पाउनु नै हाम्रो प्रमुख सफलता र सन्तुष्टिको विषय हो भने पर्माकल्चर फार्म तथा सिकाइ केन्द्रको रूपमा देश तथा विदेशमा प्रशस्ति पाउनु अर्को गौरवको विषय हो । हालसम्म मैले करिब १,२०० तालिम मार्फत संसारका १०० देशका २४ हजार मानिसलाई पर्माकल्चर बारे सिकाएको छु। नेपाल पर्माकल्चर समूह बाट प्राप्त राष्ट्रिय पर्माकल्चर सम्मान, सुभाष स्मृति प्रतिष्ठानको सुभाष स्मृति उद्यम सम्मान, धुलिखेल नगरपालिकाको धुलिखेल श्री सम्मान लगायत थुप्रै सम्मान तथा पदकहरू अनि पत्र पत्रिकाहरूमा म र हाम्रो फार्मको बारेमा प्रकाशित लेखहरूले यी सफलताहरूलाई संस्थागत गरेका छन् ।

चुनौतीहरू

पर्माकल्चर साँहै जीवनोपयोगी दर्शन तथा तरिका हो। यसले स्वास्थ्य, प्रकृति र समाजको रक्षामा धेरै जोड दिन्छ । तर अचेल आधुनिकताको होड तथा बजारको उपभोक्तावादी दर्शनले गर्दा मानिसहरूमा छिट्टै पैसा कमाइ हाल्नुपर्छ, रबाफ गरिहाल्नु पर्छ भन्ने खालको सोच बढिरहेको छ । यसले गर्दा मानिसहरू ठूला बहुराष्ट्रिय कम्पनीहरूले तयार गरेका खाना र झिलिमिली उत्पादनहरूप्रति बढी लालायित हुँदै गएका छन् । परिवर्तित जीवनशैलीमा यो स्वाभाविक पनि हो । यसले गर्दा मानिसहरूले चाहेर पनि प्रकृति तथा समाज मैत्री प्रविधि अपनाउन सजिलो छैन । सरकारले पनि राजश्व बढाउने धुनमा बजारिया

चिजबीजलाई नै बढी प्रश्रय दिएको देखिन्छ । रासायनिक मलमा अनुदान दिने सरकारले प्राङ्गारिक मलमा अनुदान दिँदैन । विदेशबाट ब्रान्डेड मदिरा आयात र व्यापार गर्न दिने सरकारले समुदायले घरघरमा तयार गर्ने रक्सीलाई देखि सहँदैन । मोटरगाडी किन्न सजिलै ऋण पाइन्छ तर भैंसी किन्ने सवालमा त्यति सहजता पाइन्न ।

विद्यमान समयको प्रमुख आवश्यकता मध्येका शिक्षा र स्वास्थ्य क्षेत्रमा व्यापारीकरण हुँदा यी सुविधाहरू यति महँगो भएका छन् कि प्रकृति तथा समाजमैत्री तरिकाबाट यिनलाई तिर्न पुग्ने आम्दानी गर्न मुस्किल नै हुन्छ। एक कक्षाको बच्चाको विद्यालय शुल्क ५० हजार प्रति महिनासम्म पर्ने भएपछि मानिसहरूलाई “एनी हाउ पैसा कमाऊ” गर्नु बाध्यता पनि छ । नेपाल र विश्वमा नै पर्माकल्चर प्रवर्धन गर्न यो नै मुख्य चुनौती हो ।



नव उद्यमीहरूलाई सुझाव

हाम्रो जीवनको प्रमुख लक्ष खुसी हुनु हो । त्यसैले तपाईंको आफ्नो कृषि व्यवसायको योजना गर्दा कस्तो प्रकारको खेती गर्दा तपाईं खुसी हुन सक्नुहुन्छ, रमाउन सक्नुहुन्छ त्यो कुराको ख्याल गर्नुपर्छ । यहाँ खुसीको कुरा गर्दा आफ्नो मात्रै हैन आफ्नो सपरिवारको खुसीको कुरा सोच्नु पर्छ । आफु रमाउन नसक्ने गरी पैसा कमाउनु या भौतिक सम्पत्ति जोड्नुले जीवनलाई झन् तनावमय बनाउँछ । हामीले गरेको कामले आफ्नो र परिवारको स्वास्थ्य राम्रो बनायो, स्वस्थ खानाको उपलब्धता बढायो, समाजमा सु-सम्बन्ध राख्न सघायो र आफूलाई आवश्यक आम्दानीको सुनिश्चितता पनि गरायो भने त्यो नै हाम्रोलागि सबैभन्दा राम्रो कुरा हो । यत्तिकुरा ख्याल गरेर काम गर्यौं भने हामी आर्थिक प्रगतिका साथै मानसिक रूपमा पनि सन्तुष्ट रहेर रमाइलो जीवन यापन गर्न सक्छौं, पर्माकल्चरको मुख्य सन्देश पनि यही हो । ईमेल: govindasharmma@gmail.com

कृषि कविता

किसानको प्रश्न - ओ मान्छे ?

सडक बन्द गर्छौं
जिन्दाबाद र मूर्दाबादको नारा लगाउँछौं
तिम्रो जस्तै मेरो पनि माग छैन र ?
ओ मान्छे,
के म पनि तिमी जस्तै मान्छे हैन र ?

तिम्रो जीवन आहा कस्तो
नाम पनि तिम्रै, दाम पनि तिम्रै, मान पनि तिम्रै
तिम्रो जस्तै मेरो पनि समाज छैन र ?

न त कुनै अभाव, न त कुनै चिन्ता
जहाँ जान्छौं, मिठै खान्छौं, राम्रै लगाउँछौं
तिम्रो जस्तै मेरो पनि रहन छैन र ?

अधिकारका कुरा गर्छौं
तलव, भत्ता, सुविधा थप्नुपर्ने भन्छौं
तिम्रो जस्तै मेरो पनि पेशा छैन र ?

उब्जाउने म, मूल्य तोक्ने तिमी
तीनमा किन्छौं, तीसमा बेच्छौं, नाफा कमभो भन्छौं
तिम्रो जस्तै मेरो पनि घरवार छैन र ?

जनता बरु मरे मरुन, पार्टीकै छ चिन्ता
भाषण सुन्न बोलाउँछौं, उर्दी जारी गर्छौं
तिम्रो जस्तै मेरो पनि कामै छैन र ?
ओ मान्छे,
के म पनि तिमी जस्तै मान्छे हैन र ?



- सुशील थापा