



# Asta-Ja USA Newsletter

October 2019, Volume 1, Issue 1

## Message from the President

### Greetings!

It is my great honor and privilege to present the first newsletter from Asta-Ja USA. As the mission of our organization is to promote sustainable development of natural and human resources through education, capacity building, charitable activities, applied research, policy decision support, and environmental conservation, Asta-Ja USA is continually striving for excellence in generating funds and implementing research, development, and community awareness programs to enhance sustainable development of these resources and the environment.



*Dr. Durga D. Poudel  
President, Asta-Ja USA*

Asta-Ja USA Executive Officers attended several conferences, primarily hosted by NRNA, and presented a poster entitled “Asta-Ja Initiatives for Kathmandu Valley Environmental Pollution Control” at the First NRNA Global Knowledge Convention, October 12-14, 2018. A video on “Agricultural and Natural Resources Development and Management” was presented at the First NRNA Global Convention in Kathmandu. Asta-Ja Executive Officers met with the Executive Board Members of Asta-Ja Research and Development Center (Asta-Ja RDC) in Kathmandu to discuss possible future collaborative projects. Asta-Ja USA facilitated the visit of Rotary Club members from USA, Damauli, Tanahu, and members from Asta-Ja RDC to a *Magar* village in Tanahu, Nepal, for a possible drinking water project. Asta-Ja USA is currently working with the Rotary Club of Honolulu Sunset, Hawaii, USA, the Rotary Club and Vyas Municipality, Damauli, Tanahu, and Asta-Ja RDC in the drinking water initiative. The Policy Advisory Council of Asta-Ja USA is working on developing policy briefs targeting current natural and human resource issues of Nepal. Asta-Ja USA’s sponsored activities include the following monthly seminar series in Kathmandu, Nepal: Ugly Flood (May 9), Dusty Air (April 27), Dirty Water: Contemporary Water Issues in Nepal (March 31), Climate Change and Environmental Quality: Challenges and Opportunities (June 6), Indoor Air Quality and Biomass Burning (July 22), Solid Waste (Aug 28), and Air Pollution in Kathmandu Valley (September 18). The June 6<sup>th</sup> seminar was participated by a team of 16 students and two faculty members from the University of Louisiana at Lafayette, Louisiana, USA. Students presented their findings on global climate change impacts on high-altitude agriculture, ecosystems, and the environment.

I would like to thank the Board of Directors and Executive Officers of Asta-Ja USA, Asta-Ja members associated with other Asta-Ja organizations including Asta-Ja RDC, Asta-Ja ICC, Asta-Ja Abhiyan Nepal, Asta-Ja Agriculture Cooperative, and Asta-Ja Vyas Bhumi Nepal, and all other Asta-Ja Campaigners as well as individuals and organizations who have helped us in accomplishing so many great things within this very short time since the establishment of Asta-Ja USA.

Please visit our website [www.astjausa.org](http://www.astjausa.org) for more information.



### Inside this issue

Editorial: Plant Biodiversity in Nepal.....	2
What is Asta-Ja?.....	3
Asta-Ja USA Supported Seminar in Kathmandu.....	5
Environmental Community Awareness Seminar Series.....	6
Nanotechnology.....	8
Pesticide Usage in Nepal.....	9
Organic Vegetable Production..	10
Realities of Environmental Pollution.....	12

### Plant Biodiversity in Nepal

Plant variation at different levels, including genes, species, or ecology is called plant biodiversity. There may be genetic diversity of a single species. There may be diversity at the species level, and a combination of several species comprise the ecological diversity. All these three forms of variations are essential for sustainable agriculture.

Geographically, Nepal is a small country. It is about 22 times smaller than India, 65 times smaller than China, and 67 times smaller than the USA. This is less than 0.1% of the total area of the planet. However, it has a high level of plant diversity. For example, it has more than 6,900 flowering plant species, which is more than 2.6% of the world's available plant species whereas China and India have 11.9 and 6.9% of the total diversity, respectively. We can utilize this diversity in agriculture development. Mainly, there is a growing interest in how to utilize these available genetic resources for economic benefit.

Developed countries have already harnessed the genetic resources and valuable biodiversity for their economic gain. However, a country like Nepal is lagging in tapping the available genetic resources. Several examples can be cited including local valuable resources of rice with excellent taste and flavor, buck wheat, and there are several medicinal plants which have originated from Nepal. Considering their economic significance and potential utilization in agriculture, we need to preserve them properly. Because of non-systematic cultivation, and moving towards the adoption of monoculture, there is also a danger of extinction of the genetic resources.

While it is essential to preserve the available resources, it is also equally important to protect them from over exploitation. This means that there should be a provision for legal protection of plant materials in a country. It is estimated that there are about 300 plant species that can be utilized in agriculture including cereals and fruits and vegetables. If medicinal plants are included, the number may go up to 2000. While some initiative has been taken to conserve the agricultural genetic resources, medicinal plants are ignored. Nepal Agriculture Research Council (NARC)

has realized the importance of germplasm in agriculture research and has established the gene bank with an extensive collection with *in situ* as well as *ex situ* conservation approaches. While available germplasm from wild and domestic fields are yet to be fully collected, the establishment of a gene bank is a positive step. We need to expand the germplasm collection effort to as many species as possible.



Dr. Dilip R. Panthee  
North Carolina, USA

---

*It is estimated that there are about 300 plant species that can be utilized in agriculture including cereals and fruits and vegetables. If medicinal plants are included, the number may go up to 2000.*

---

While some of the national policies are already in place to facilitate plant diversity management such as the Agriculture Perspective Plan (1995), Biotechnology Policy (2006), and National Agrobiodiversity Policy (2007), others provide the policy framework for the management of biodiversity in Nepal. More can be suggested, if necessary, to advance the development of technology and utilization of genetic resources. The policy should be user-friendly and ultimately benefit the end-users such as researchers, agriculturists, and farmers.

\*\*\*\*\*

#### Editorial Board

**Dr. Dilip R. Panthee, Coordinator**

**Dr. Prem Bhandari, Member**

**Dr. Raju Pandey, Member**

**Mr. Sahas Shrestha, Member**

## What is Asta-Ja?

Dr. Durga D. Poudel  
President, Asta-Ja USA

Asta-Ja is a theoretically grounded grassroots-based planning and management Framework for conservation, development, and utilization of natural and human resources. Asta-Ja means eight of the Nepali letter “Ja” [*Jal* (water), *Jamin* (land), *Jungle* (forest), *Jadibuti* (medicinal and aromatic plants), *Janashakti* (manpower), *Janawar*, (animals), *Jarajuri* (crop plants), and *Jalabayu* (climate)]. Asta-Ja promotes accelerated economic growth and socio-economic transformation of the nation. It is a scientific, holistic, systematic, self-reliant, and multidisciplinary Framework for the conservation, development, and utilization of Asta-Ja resources. The Asta-Ja Framework encompasses the elements of each of the four subsystems of the planet earth system: hydrosphere (*Jal*), lithosphere (*Jamin*), biosphere (*Jungle*, *Jadibuti*, *Janashakti*, *Janawar*, *Jarajuri*), and atmosphere (*Jalabayu*). The eight elements of the Asta-Ja system are very intricately linked and strongly connected. Hence, it is important to have sustainable conservation and development of each of the eight elements of Asta-Ja for better functioning of the entire system. Simply put, if a farmer in a smallholder farming system wants to be successful in organic agriculture, he/she should emphasize sustainable management and development of Asta-Ja resources so that a great deal of

The principle of policy decision making underscores effective policy measures for sustainable development, conservation, and utilization of natural resources for socio-economic transformation. To develop effective policy measures, it emphasizes multisector, participatory, and holistic approaches in problem assessment and analysis and the identification of alternative solutions. The principle of interrelationships and linkages stresses that Asta-Ja resources are intricately linked to each other and requires a deep understanding of these relationships for the sustainable development and utilization. Similarly, the principle of comprehensive assessment emphasizes detailed assessment of Asta-Ja resources. The principle of sustainable technologies and practices emphasizes research and development in technologies and practices and innovations for sustainable conservation, utilization, and development of Asta-Ja resources. The principle of institutions, trade, and governance focuses on institutional strengthening, governance, and domestic and foreign trades. It emphasizes handling diverse Asta-Ja related concerns including ownerships, decision-making, resource sharing, customs and duties, trade barriers and restrictions, and international relations. Finally, the overarching principle of sustainable community development and

---

*The Asta-Ja framework encompasses the elements of each of the four subsystems of the planet earth system: hydrosphere (Jal), lithosphere (Jamin), biosphere (Jungle, Jadibuti, Janashakti, Janawar, Jarajuri), and atmosphere (Jalabayu).*

---

synergy can develop within the Asta-Ja system to create a higher level of farm productivity and environmental quality. The *Jalabayu* (climate) serves as the most critical and central driving element of the Asta-Ja system. Any changes in weather or climatic conditions will influence all other *Jas*.

The Asta-Ja Framework has eight principles for its practical application: 1) community awareness, 2) policy decision making, 3) community capacity-building, 4) interrelationships and linkages, 5) comprehensive assessment, 6) sustainable technologies and practices, 7) institutions, trade and governance, and 8) sustainable community development and socio-economic transformation. The principle of community awareness plays a pivotal role in the Asta-Ja Framework. Grassroots communities are the ultimate agents of change and the beneficiaries. The principle of community capacity-building emphasizes self-reliant, local level planning and development of environmental and natural resources for socio-economic transformation of the nation.

socio-economic transformation emphasizes implementation of integrated developmental initiatives across the nation to target specific communities for sustainable utilization and development of Asta-Ja resources, income generation, and socio-economic transformation. Communities must be free from poverty, hunger, and malnutrition, and must have basic infrastructure for quality education, health services, employment opportunities, peace and security, excellent environmental quality, and resiliency. The Asta-Ja Framework presents an opportunity for community capacity-building by addressing community resource problems comprehensively and holistically.

As the founder of the Asta-Ja Framework, this author has published several journal articles on this topic after the first groundbreaking article on Asta-Ja in 2008. Some of the major articles specific to the Asta-Ja Framework are Asta-Ja environmental and natural resources policy, Asta-Ja strategy, Asta-Ja management capacity-building, and management of the Asta-Ja system. Furthermore, this

author has published numerous articles applying Asta-Ja Framework in the context of Nepal such as Restructuring National Planning Commission focusing on Asta-Ja and Nepal Vision 2040, Asta-Ja for Grassroots-based Economic Development, Asta-Ja Crusade for a Fast-paced Agro-Jadibuti Industrialization, Agricultural and Natural Resources Development and Management Strategy, and Management of Cooperatives Focusing on Asta-Ja and Globalization. These publications have enormously enriched the Asta-Ja Framework by covering its theoretical, scientific, and operational dimensions and competitive advantages.

The Asta-Ja Framework serves as a unifying guide for environmental and natural resource planning and management. Through this framework, all governmental and nongovernmental agencies, private businesses, community organizations, academia, international aid agencies, and other stakeholders, who are concerned with the Asta-Ja resources, can come together in planning and management. The Asta-Ja Framework helps us in comprehending and understanding the critical natural and human resources system in a more effective way and in serving as an invaluable platform for all stakeholders

engaged in the Asta-Ja system to work together efficiently in the assessment, understanding, conservation, and utilization of Asta-Ja resources for sustainable development. Through the Asta-Ja Framework, international programs and initiatives such as Climate Actions, SDGs, and Sendai Disaster Risk Reduction can be effectively linked to grassroots communities and organizations and can strengthen global efforts to effectively tackle issues such as natural resource management, sustainable development, food and energy, income generation, poverty eradication, natural disaster management, community resiliency, environmental quality, and Global Climate Change. Asta-Ja brings the power of eight "Ja" in sustainable development, socio-economic transformation, and environmental quality.

\*\*\*\*\*

**Asta-Ja USA would like to extend  
warm wishes on auspicious  
occasion of Nepali festivals  
Dashain, Tihar, Chhath and Lhosar.**

**Asta-Ja USA Family**

### Asta-Ja USA Supported Seminar in Kathmandu Attracts US Students and Faculty



A seminar on 'Climate Change and Environmental Quality: Challenges and Opportunities' was held on 6 June, 2019 in Kathmandu as part of the monthly seminar series on raising community awareness on environmental issues with the support from Non-Resident Nepalese Association USA, Community Environment Academy, and Asta-Ja USA.

The effects of Global Climate Change on our environment are widespread. Global Climate Change is affecting atmospheric temperatures, water availability, precipitation, ecology, agriculture, new diseases and parasites, human health, and flooding conditions. Environmental degradation is occurring due to several reasons including the rapid but unplanned urbanization, increasing number of vehicles, industrial emission, and burning of wood trash and other materials. In addition, air pollution caused by excessive dust in the air, chemical uses in agriculture, poor septic systems, poor disposal of hazardous wastes, and other activities are leading to environmental degra-

ation at an alarming rate. Environmental pollution has not only threatened public health, it is adversely affecting the aesthetics, tourism, ecological integrity, and economic activities in the city of Kathmandu. Unsafe disposal of hazardous waste, e-waste, and biomaterials is spreading highly toxic substances which are often long lasting in the environment. City inhabitants are already experiencing the impacts of pollutants in the air and water. There is a strong public call for immediate control on environmental pollution and ecological restoration in the Kathmandu Valley.

The seminar had two sessions, each with five presentations. The first session on 'Environmental Quality of Kathmandu Valley' was chaired by Professor Durga D. Poudel, Environmental Science Program, School of Geosciences, University of Louisiana at Lafayette, USA. Professor Poudel introduced the Nepal Field Experience Pilot Study Program (May 21-June 8, 2019), of the University of Louisiana in which sixteen students and two faculty members were visiting Nepal. All sixteen students presented their findings in the seminar. Associate Professor Timothy Duex from the same university chaired the second session on 'Global Climate Change'. There were 10 papers presented in two sessions of the seminar. Papers presented in the seminar were: (1) Geology of Kathmandu and Nepal, (2) Water and sanitation, (3) Climate change and zoonotic diseases, (4) Air and water pollution of Kathmandu Valley, (5) Youth alliance for environment, (6) An overview of climate change impacts in Nepal, (7) Climate change adaptation and green infrastructure, (8) Climate change impacts on rainfall pattern, agricultural production, and wildlife, (9) Climate change and geohazards and changing hydrology of glaciated landscape, and (10) Emerging diseases, pests, parasites and zoonotics.

\*\*\*\*\*



## Environmental Community Awareness Seminar Series



Environmental pollution has not only threatened public health, it has adversely affected the aesthetics, tourism, ecological integrity, and economic activities in Nepal. Unsafe disposal of hazardous waste, e-waste, and biomaterials is spreading highly toxic substances with long lasting effects in the environment. City inhabitants are already experiencing the impact of contaminants in air and water.

Global Climate Change and Environmental Quality is a serious public concern in Nepal. Atmospheric effects include brown clouds, thick haze and smog, reduced precipitation, cold winters, and dimming of the earth surface. Environmental degradation is caused by unplanned urbanization, increasing vehicles, burning wood and other trash material, chemical uses in agriculture, and excessive dust in the air.

To contribute to the governmental campaign of controlling environmental pollution in the rural and urban areas in Nepal, Asta-Ja USA has partnered with the Non-Resident Nepali Association National Coordination Council (NRNA NCC) USA, Community Environment Academy, and Asta-Ja Research and Development Centre (Asta-Ja RDC), Kathmandu, Nepal, for a monthly seminar series called "Environmental Community Awareness Seminar Series". Monthly seminars hosted this year in Kathmandu so far include: Dirty Water: Contemporary Water Issues in Nepal (March 31), Dusty Air (April 27), Ugly Flood (May 9), Climate Change and Environmental Quality: Challenges and Opportunities (June 6), Indoor Air Quality and Biomass Burning (July 22), Solid Waste (Aug 28), and Air Pollution in Kathmandu Valley (September 18).





The overall objective of the seminar series is to raise community awareness on environmental pollution in the Kathmandu Valley primarily targeting student communities representing both colleges and high schools. Students acquire basic knowledge about sources and causes of pollution, impacts of pollution, and its solution. Students are able to analyze existing pollution control strategies and develop their own models, technologies or strategies for future implementation.

As envisioned by the Constitution of Nepal 2015 (Part 3, Article 30), a clean living environment is the fundamental right of the citizens of Nepal. In order to improve environmental conditions in the country, the Government of Nepal has declared a five-year environmental campaign called 'Nepal Clean Environment Campaign'. The campaign aims to control environmental pollution in the rural and urban areas, manage solid-waste disposal, and increase green areas and public parks. However, due to very high levels of environmental degradation coupled with very low levels of public awareness and the lack of appropriate corrective measures, it is quite challenging for the Government of Nepal to achieve environmental goals within the stipulated timeframe of the Nepal Clean Environment Campaign. Asta-Ja USA is working with NRNA, Asta-Ja RDC, and other stakeholders to assist the governmental initiative "Nepal Clean Environment Campaign" by giving continuity to this environmental community awareness seminar series across the country at least until 2025.



## Do you know?

### *Asta-Ja USA is a 501(C)(3) Public Charity*

Internal Revenue Service (IRS) has determined that Asta-Ja USA is exempt from federal income tax under Internal Revenue Code section 501(c)(3). The 501(c)(3) status is valid from the date of February 28, 2018, date of registration of Asta-Ja USA. IRS determined Asta-Ja USA as public charity. With this status, donors can deduct contributions made to Asta-Ja USA. **To donate to Asta-Ja USA:**

Write a check and give it to one of our board members or mail it directly to 500 University Ave #1410, Honolulu, HI 96826 Or using your credit card or Paypal from our website at [astajausa.org](http://astajausa.org).

### *Chunder Drinking Water Project*

Asta-Ja USA is helping Rotary Club (RC) Honolulu Sunset and RC Damauli to develop a Rotary's Global Grant Project. The drinking water project aims at serving over 300 people of Chunder Village, Tanahu. Dr. Arjun Aryal, Asta-Ja USA's General Secretary and International Service Director of RC Honolulu Sunset is the international contact for the grant application.

### *Asta-Ja USA is in Amazon Smile*

Do you shop at Amazon.com? Asta-Ja USA is eligible to receive AmazonSmile donations. Amazon donates 0.5% of your purchase but you have to choose "Asta-Ja USA" as your charitable organization. To do this, 1) visit <https://smile.amazon.com/> 2) Sign in and Choose your Charity. To select us, find a search box that says pick your own charitable organization and simply search for "Asta-Ja" and select "Asta-Ja USA".

Please note, you MUST always start at [smile.amazon.com](http://smile.amazon.com) to support Asta-Ja USA. [smile.amazon.com](http://smile.amazon.com) takes you to the same portal you use at the [amazon.com](http://amazon.com).

### Nanotechnology

Nanotechnology, a branch of engineering technology, deals with the application of extremely small materials that are 100 million times smaller than a typical tennis ball. The unit of measurement for these tiny materials is nanometer (nm). To give a better perspective, the size of a water molecule is ~ 0.1 nm, glucose molecule ~1.0 nm, viruses ~20 nm, and bacteria ~1000 nm. Nanotechnology refers to the state-of-the-art technology within the scale of 1 to 1000 nm.

Nanotechnology has revolutionized various fields including computer industry, energy, and medicine. In computer industry, nanotechnology made it possible for manufacturing laptops from large mainframe computers with much better performance. In energy, solar panels and batteries are getting smaller to fit today's need. Similarly, in medicine, scientists are devising conventional small molecule drugs into the nanometer size (~ 100 nm) carrier called nanoparticles. Drugs containing nanoparticles, which are called nanomedicines, have the potential to change the way we currently treat diseases. According to the National Institute of Health, USA, nanomedicine is defined as "application of nanotechnology for the treatment, diagnosis, monitoring, and control of biological system."

Among many routes of drug administration, oral and intravenous injection are the two most common ways. Often, doctors prescribe a multiple sequence of doses with the hope that a maximum amount of drugs will reach the target site to cure simple to advanced diseases like cardiovascular, neurological disorder, and cancer. However, these drugs often encounter a series of obstacles in their administrations in our body such as from our immune system (a defense system in the body). The immune system recognizes these drugs as foreign materials and immediately tries to eliminate them from the body before they reach the target. Another big concern is the nonspecific distribution of drugs throughout the body resulting in adverse side effects. In this context, nanotechnology offers an efficient therapeutic strategy over the conventional approaches by minimizing side effects while increasing drug delivery precisely to the targeted disease sites.

Nanotechnology offers a better way to package drugs into the nanoparticle envelop to enhance drug solubility in water, protect it from degradation, decrease toxicity, and familiarize it with our immune system. Due to the large surface of nanoparticles as compared to small molecular drugs, we can modify its surface to make it body friendly while protecting the potency and functional properties of drugs. Moreover, the surface of nanoparticle envelop can also be tuned with unique

chemical properties that has an ability to navigate it to the target sites and sustained the drug release in such a way that our body can tolerate the toxic effect of the drug. Also, multiple drugs and imaging modalities that can fit within this envelop assist us fighting against drug resistance diseases while monitoring therapeutic

response simultaneously. The presence of navigating a system through nanotechnology will maximize drug delivery to the intended sites while reducing the dose of currently used small molecular drugs and drug associated toxicities. This multifunctional property of nanomedicine has great potential in revolutionizing the future treatment of diseases.



Dr. Santosh Aryal  
Kansas State University  
Manhattan, KS, USA

---

*Nanotechnology offers a better way to package drugs into the nanoparticle envelop to enhance drug solubility in water, protect it from degradation, decrease toxicity, and familiarize to our immune system.*

---

Nepal can harness the benefit of nanotechnology in a very meaningful way. Due to its diverse agroecology, Nepal is gifted with vast amount of medicinal and aromatic plants (i.e. *Jadibuti*, one of the eight elements of Asta-Ja). There is a huge possibility for developing natural extracts from these plants, which have great potential for treating diseases organically. Unfortunately, the bioavailability of natural products when used as a drug is very low and most of these extracts are insoluble in water. They often need toxic organic solvents to solubilize during drug formulations. A great example is the clinically used anticancer drug Taxol, which is the extract of *Taxus brevifolia*. The use of nanotechnology has the potential to enhance the application of naturally occurring drugs. Proper investment in this field can reward us with immense socio-economic benefits. Through a strong collaboration between the Government of Nepal, industries, private businesses, scientific institutions, and other stakeholders, it is possible to develop medicinal and aromatic plant nanotechnology, which may revolutionize the therapeutic approach and treatment of diseases in the future.

\*\*\*\*\*

## Pesticide Usage in Nepal

Pesticide usage in Nepal, on an average, is reported at 396 g per hectare, which is relatively low. However, other studies have reported a much higher amount of pesticide use, especially on high value crops such as vegetables grown near urban areas. With the lack of proper information, poor training and implementation of regulations, negative impacts due to improper use are huge. Several news media and social networking sites often spread the tales of pesticide residue in fresh vegetables and fruits in such a manner that it has not only helped to create public awareness, but rather a chaotic situation. The media has largely failed to explore the overall impacts of pesticide misuse beyond consumer health. The health cost of farming family members, especially women and children are often neglected in such reporting. The dangers of pesticide resistance development by various pests, outbreaks of secondary pests, and impacts on non-target organisms have seldom become the topic of discussion.

The introduction of Rapid Bioassay of Pesticide Residues (RBPR) developed in Taiwan began testing fresh fruit and vegetables at the Kalimati wholesale market in June 2014 and has extended to various markets outside Kathmandu. RBPR is basically testing the pesticide residue by indirect methods, by measuring the extent of suppression of the enzyme Acetylcholinesterase (AChE). Often, media has wrongly reported the extent of AChE suppression as the amount of pesticide residue in the tested vegetables/fruits creating hue and cry among ordinary consumers.

According to a recent report, there are 3035 different formulations of 170 pesticides (that includes 60 insecticides, 42 fungicides, 30 herbicides) registered for use in Nepal. Among the insecticides, organophosphate and carbamates may constitute a significant share, but pyrethroids, neonicotinoids are also widely used. Two major groups of insecticides, carbamates and organophosphates, which kill insects by suppressing AChE activities, can be detected by RBPR, but the rest of the insecticide, fungicide, and herbicide residue cannot be detected. Furthermore, the small-holder farmer production system is characterized by production of multiple crop commodities that apply multitude of pesticides at different rates and different times. Harvest from such a complex production system is collected and brought to the market. The sample that was taken at the wholesale market site obviously cannot correctly represent variability present in the shipment. The test has probably helped create some sort of fear (to misuse pesticides) among farmers and a false sense of security (of eating healthy food) among the consumers.

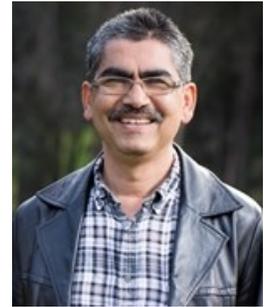
The brown planthopper outbreak in the Chitwan rice field in the mid-1990s led to the initiation of the Integrated Pest

Management (IPM) program in Nepal. After more than 20 years of the implementation of the IPM program in Nepal, which aimed to decrease reliance on pesticides, actual pesticide usage has increased. Though many farmers have switched to alternative pest management tactics, such as using extracts of naturally occurring plants, most commercial growers still rely on hazardous pesticides to protect their valuable commodities. It is not that the farmers do not understand the potential hazards to their families, consumers, and the environment, but the lack of adequate alternative technology and poor access to the right information on pesticide safety and negligence are to be blamed for often indiscriminate pesticide usage.

Much of the hazards related to pesticide use have been associated with a poor selection of pesticide, unsafe application methods and rates, and disregard for the waiting period. Shifting all the blame to the poor farmers does not help solve the pesticide problem. The relevant authority should begin to act responsibly. We must develop a uniform pesticide recommendation, and pesticide sale and use must be regulated. Pesticide labels must be standardized and made available in the language that end users can comprehend. Such labels should be scrutinized by experts for the accuracy of content that includes information on personal and environmental safety, recommended crops and target pest, rate of applications, impact on non-target organisms, potential hazards due to misuse, and their consequences. Pesticide usage should be regulated at the crop production sites, which can be done through farmers' groups or cooperatives, keeping records of all pesticide usage and enforcing the waiting periods before harvest. More research on developing and implementing integrated pest management methods with due consideration to techniques such as host plant resistance/tolerance, cultural methods, natural enemies conservation, augmentation, and bio-rational chemicals such as pheromones help reduce pesticide dependence and associated hazards. For the full article in Nepali language, please visit

<http://www.astajausa.org/publications/>.

\*\*\*\*\*



*Dr. Raju Raj Pandey  
California, USA*

## Organic Vegetable Production

Asta-Ja Research and Development Center (Asta-Ja RDC) has been working on an organic vegetable production project, which is supported by GreaterGood.org and Asta-Ja USA, in Vyas Municipality, Tanahau, Nepal, since March 2019. Three hundred households are participating in the project. The major objectives of the project are: 1) To improve nutritional status of the target communities through vegetable production in home gardens, 2) To increase household income through the sale of vegetables, and 3) To build capacity of local communities on improved methods of vegetable cultivation. The project supports target communities by providing vegetable seeds, conducting training on improved vegetable cultivation, and establishing demonstration plots of improved vegetable cultivation.

### Baseline survey

A total of 300 households were interviewed in Ward 5 and 6 of Vyas Municipality in the Tanahau district. The survey questionnaire had eight sections with a total of 30 questions. The eight sections of the questionnaire included: respondent's consent and identification, respondent demographic profile, current land use/livestock; area, production, consumption, sale and purchase of vegetables in the last year; assessment of vegetable farming in home gardens (area, seed quantity), improved vegetable farming practices implemented last year, current problems in vegetable cultivation, and last year's household income. Six local interviewers (four males and two females) were recruited to conduct the baseline survey. They were given a one-day training for the survey, which included project objectives, interview technique, and the content of the survey questionnaire. The baseline survey was conducted from March 16-24, 2019.

### Farmer trainings

Farmer trainings on improved vegetable cultivation methods were conducted from April 4-7, 2019. These trainings aimed at enhancing the local farmer's

knowledge and skills on organic vegetable production. The main content of the training consisted of the importance of vegetables in improving nutritional status of the family, particularly women and children; improving methods of vegetable cultivation including soil management, controlling insect pests and diseases, and organic agriculture practices for vegetable cultivation. Farmer trainings were conducted by highly qualified and experienced resource personnel at four locations in the project area. All 300 households participated in the training.



*Mr. Pushpa Lal Moktan  
President, Asta-Ja RDC*

### Vegetable seeds distribution

All three hundred households received summer vegetable seeds, which were distributed during the training period from April 4-7, 2019. The vegetable seeds included sponge gourd, bottle gourd, bitter melon, cucumber, pumpkin, okra, and beans. High quality vegetable seeds were procured from a reputable seed company in Nepal.

### Plastic tunnel house

Two plastic tunnel houses were constructed from April 12 – 20, 2019 for the demonstration of improved vegetable cultivation methods. The demonstration sites were identified by the project participants. Target households gathered at demonstration sites for observation and discussion of organic vegetable production.

### Midline survey

The main objective of the midline survey was to assess the achievements of vegetable seed distribution, training, and other activities implemented in the summer



## OBITUARY

season (March – August, 2019). In the midline survey, 150 households representing the project area were randomly selected and interviewed. The field work of the midline survey was conducted in two phases – first from June 9-14, 2019 and second from Sept 1-6, 2019. In the first phase, Mr. Avery J. Baker, a graduate student from the University of Arizona, Tucson, Arizona, USA, participated with Asta-Ja RDC team for the field work. A total of 33 households were surveyed. The second phase was conducted by the Asta-Ja RDC team and a total of 117 households were surveyed. Midline survey results indicate a clear positive impact of the project on organic vegetable production. Survey results showed both an increase in production and consumption of summer vegetables by project participants. The percentage of the farmers who sold surplus vegetables had also increased. In the meantime, there had been a decline in the quantity of vegetable purchased for home consumption. With regard to improved farming practices, most farmers had adopted either improved or good quality local seeds. The majority of the project participants used Farm Yard Manure resulting in the decline of chemical fertilizers usage.

\*\*\*\*\*



**Professor Madhukar Shumshere JB Rana** (July 19, 1941 to Oct 16, 2019), who passed away peacefully on Oct 16, 2019, served the Government of Nepal as Finance Minister. He was a Development Economist, Public Finance Specialist, Political Scientist, International Relations Specialist, and a successful Entrepreneur. Born in Lalitpur, Nepal, in 1941, Professor Rana attended Dow Hill Girls' and Victoria Boys' School, Darjeeling, from 1949-56 to obtain his Senior Cambridge certificate where he won the Best All Round Student of the Year, 1956. He received his B.A. (Hons) degree in Political Science from the Hindu College Delhi University in 1962; he was ranked Board 3rd. From 1962-64, Professor Rana attended the Graduate School of International Relations at Geneva University in Switzerland (Certificat des Hautes Etudes Internationales); from 1964-66, he attended the Manchester University in England for a degree in Economic Development (Post Graduate Diploma in Advanced Studies); and in 1967 he attended the MacMaster University in Canada, for a Master's degree in Public Finance. From 1967-68, he held the Federal Government of Canada Position of District Manpower Economist for Metro Hamilton Wentworth Niagra Region Ontario Canada, and from 1969-71, he worked as a Lecturer of Economics at North Bay University in Canada and as an Associate Teaching Master for Industrial Relations, Statistics and Economics at the Canadore College of Applied Arts and Technology. Professor Rana joined CEDA at TU, Nepal, as an Associate Professor in 1971 and became the Executive Director for CEDA in 1978. He served the Government of Nepal at various capacities including as CEO for National Trading Corporations, 1973-74, Head for the Task Force on Trade, Transit and Commercial Policies, 1975-77, Ministry of Industry and Commerce; Chief Economic Advisor, 1982, Ministry of Finance; Assistant Minister (Special Advisor), 1996, Ministry of Foreign Affairs; State Minister (Senior Advisor), 2002, Ministry of Finance; and Finance Minister, 2005. and Commerce; Chief Economic Advisor, 1982, Ministry of Finance; Assistant Minister (Special Advisor), 1996, Ministry of Foreign Affairs; State Minister (Senior Advisor), 2002, Ministry of Finance; and Finance Minister, 2005. Professor Rana was the Founder Chairman, Nepal Finance; Founder Chairman, Shaligram Hotel; and Founder Member of Board, South Asian Institute of Management, Lalitpur, Nepal. He was invited to Brookings Institution, DC, in 1977 as a VIP Guest of State Department, USA, to attend the North South Dialogue. The UN positions held by him include UNCTAD Sr. Regional Economist, Laos and Afghanistan, 1979-82, and UNDP South Asian Sr. Programme Manager, 2004. He was a member of the International Advisory Panel of SAPRI founded and chaired by former President Chandrika B Kumaratunga, and a member of the Academic Advisory Panel of SAARC CCI, Islamabad. As a senior advisor of Asta-Ja International Coordination Council (Asta-Ja ICC), Professor Rana graciously provided extraordinary guidance, support, and encouragement to the Asta-Ja movement. His invaluable contribution to Asta-Ja's networking with national and international development specialists, policy makers, bankers, businessmen, politicians, entrepreneurs, and other stakeholders will never be forgotten. Professor Rana remained very active on nation-building until the last moment of his life and has enriched the Asta-Ja movement continuously through his vast knowledge and experience coupled with his great passion and enthusiasm for socio-economic transformation and sustainable development of Nepal. Professor Rana, who has touched the heart of so many people across the globe, left for his heavenly abode. The Asta-Ja Family is deeply saddened by Professor Rana's untimely demise and irreplaceable loss of Nepalese intellectuals and Asta-Ja Campaigners. He is survived by his wife Mrs. Greta Rana, two sons, and three granddaughters. We extend our heartfelt condolences to the bereaved family and pray Almighty for Professor Rana's soul to rest in eternal peace.

\*\*\*\*\*

# Realities of Environmental Pollution: A Louisiana College Student's Trip to Nepal

In the beginning of spring 2019 I began preparing for what would soon be a perception-altering experience. A little information about myself, I'm a senior attending the University of Louisiana at Lafayette studying Environmental Science. I grew up in southern Louisiana but was fortunate enough to travel all over the country with my family as well as explore the continent of Australia. In the beginning of the spring semester, I was informed by Professor Durga D. Poudel, Environmental Science Program, School of Geosciences, of an opportunity to visit his home country of Nepal under the newly developed Study Abroad Nepal Field Experience program in the coming summer. Upon hearing of this program, I immediately began to make necessary preparations to take part in it. My concept of Nepal was limited to that of only photos and stories. I was preparing for amazing clear skies and breathtaking views of the Himalayas on a daily basis, but sadly my expectations did not connect with the stark reality. Every student was encouraged to pick a research topic pertaining to Environmental Quality or subsequent effects of Climate Change. The area of research I decided to focus on was air quality of Kathmandu Valley. The first thing I noticed upon arrival in Kathmandu was that air quality is a very serious issue impacting the livelihood of every Nepalese citizen. During my taxi ride from the Kathmandu International Airport to the Shaligram Hotel, Jawalkhel, I was shocked by the number of individuals wearing simple surgical masks to protect themselves from what seemed to be a never-ending sea of suspended particles in the air, motor vehicle emissions, and construction debris.

The only time I had seen so many of these masks in the same place was when I was six years old and my father

would take me with him into the Cardiology Cath Lab. Physicians wear these masks in order to prevent contamination, whereas the Nepalese citizens wear masks to mitigate the effects of already contaminated air, which seemingly has no bias among the populace. I fully realized this whenever another student who accompanied me on this trip, Thomas Mizelle, petted a dog that belonged to a local family our group was interviewing. This dog loved the attention, but couldn't express his gratitude simply because it was too busy hacking up foreign objects and black soot, as if it had smoked a pack a day for its entire life.



*George Bybee Bailey  
University of Louisiana at  
Lafayette, USA*



*Fellow University Student, William Faulk, walking  
across a bridge with a newly made friend.*



*Traffic Police Officer manning his station*

At that moment I understood I was no longer looking at a dog, but rather a symbol of a much larger issue. This animal represented all children that were born into a deteriorated situation, and were forced to face the consequences of those who came before them. The actions of previous generations and their consequences were no fault of these innocent children and animals. The only way that this will change is through the education of the youth and a desire to leave the Earth better than they found it. This is the generation that has been tasked with what seems to be an insurmountable challenge.

However, what I gathered from every individual I had the opportunity to talk to was the desire to improve these conditions. The resolve, determination, and pride of the Nepalese people along with help from students like myself is the only way these problems will be overcome. I am thankful for the opportunity, along with the hospitality of the Nepalese people, for shifting my paradigm when it comes to environmental problems.



Skyline view of Kathmandu from Chandragiri Summit



Local schoolchildren raising air quality awareness and advocating for environmental justice at Swayambhunath, Kathmandu.



Presentation of research findings at Asta-Ja Research and Development Center (Asta-Ja RDC) sponsored conference on June 6, 2019.

My concept of environmental problems were primarily focused on problems facing the state of Louisiana or the United States, however the experience made me realize that environmental protection deserves to be given to everyone and must include the world as a whole, not just the local environment in which you live.

\*\*\*\*\*

## Executive Officers



**President**  
Dr. Durga D. Poudel  
Soil and Environmental  
Scientist



**Vice President**  
Dr. Prem B. Bhandari  
Social Demographer



**General Secretary**  
Dr. Arjun Aryal  
Geophysicist



**Joint Secretary**  
Dr. Rupak Rauniar  
Supply Chain  
Management Expert



**Treasurer**  
Mr. Sahas Shrestha  
PE, CFM  
Project Management  
Expert



### Asta-Ja USA

500 University Ave #1410  
Honolulu, HI, 96826  
USA  
Phone: (337)-739-3694  
E-mail:  
info@astajausa.com  
Website:  
www.astajausa.org

## Board of Directors



Dr. Ambika P. Adhikari  
Des., AICP  
Urban and  
Environmental  
Planner



Mr. Bikash Sainju  
Businessman



Dr. Dilip R. Panthee  
Tomato Breeder and  
Horticulture Scientist



Mr. Gyanshor Shrestha  
Businessman



Dr. Jiwnath Ghimire  
Urban Planning  
Scholar



Dr. Kabi R. Neupane  
Plant Molecular  
Physiologist



Dr. Kalpana Khanal  
Economist



Ms. Kamala Neupane  
Registered Nurse



Ms. Neela Joshi  
Computer Scientist



Dr. Peetambar Dahal  
Plant Biologist



Dr. Pushpa R. Pathak  
MD, Internal  
Medicine and  
Hospitalist



Dr. Raju Raj Pandey  
Pest Management,  
IPM and Organic  
Agriculture Scientist



Dr. Tara Niraula  
Educator, Researcher,  
and Social Policy  
Expert

## Policy Advisory Council



Dr. Basu D. Sharma  
Professor of Business  
Administration



Dr. Deergha Adhikari  
Professor of Economics



Dr. Khushi Ram Tiwari  
Plant Breeder



Dr. Krishna P. Paudel  
Professor and Environmental  
Resource Economist



Dr. Purusotam (Puru) L.  
Shrestha  
Mines and Mineral  
Geologist