

December 2019 Issue 1

Reflections

The Students' Magazine



ICAR-Indian Institute of Horticultural Research
Hesaraghatta Lake Post, Bengaluru - 560 089



This magazine is available online at the URL <https://www.iihr.res.in/pg-education>

Welcome!

Welcome to the first issue of *Reflections- The Students' Magazine*

On a fine day in August-2019, during the welcome address to the fifth batch of IARI-IIHR students, our Professor and Director made a remark that we should have a students' magazine. A magazine encompassing different aspects of academic life and the way students look and perceive the things around and thoughts within them. With that, started the genesis of our very first students' magazine and today, we are more than happy to bring to you the Reflection of our students.

ICAR-IIHR can be seen as a mini India when it comes to the Ph.D. Scholars, coming from different parts of this culturally rich country. **Anamika (page 2)** writes about what inspired her to study in a different state and how the cultural and linguistic diversity of India enthralled her. In last few decades, there has been lot of talks on women empowerment, although the scenario has improved, there remain some deeply rooted issues that warrant attention. **Phiba (page 5)** tells about the matrilineal society, a rare and beautiful society of Meghalaya, the land to which she belongs and leaves us with the question that maybe we should revisit our roots and find answers to the ever-nagging problems our world is facing today. The one thought we all have from the moment we enter our graduation programme and which aggravates the moment we register for first trimester of Ph.D., is JOB! **Ikram (page 8)** writes about the issues faced by our ultimate stakeholders and how we can grab those constraints as opportunities by being an **Agri-entrepreneur**.

We received beautiful paintings, paper crafts, dry flower art and photographs illustrating just another reflection of the creativity we have in our students. The entire life takes a new turn as you close the last chapter of your academic life and enter the unprotected, ever-challenging real life. To know how it feels to be out of the campus gate, we contacted our seniors who brought to us some extracts from down the memory lane. **Dr. Subhash (page 19)** writes about how IIHR-campus will always be a cherished memory to him and how the scientists and environment of IIHR made him reach to where he is today.

As the year comes to an end it's time we look back to the past and contemplate on the things we did, achievements we made and failures we had to endure. Let's think about all that and vow to create a better version of ourselves with each passing day.

We, at **REFLECTIONS**, would like to take this opportunity to sincerely thanks, Director, ICAR-IIHR for his encouragement and support in making this issue come into existence. **We are deeply grateful to Society for Promotion of Horticulture (SPH) for funding the printing of this issue.**

As always, the life at IIHR is hectic, with all the projects, research, exams (and job hunting). But we hope you can find time within your schedule to take a break and get refreshed with our first issue.

So, download your copy, brew some coffee and ENJOY!

Nusrat Perveen, Editor
Students' representative, Board of Studies, IARI-IIHR

Are you a painter? A photographer? A wanderer? An artist? Do you want people to know your opinion on social issues? Do you have a story you want the world to hear? Do you have tips for the improvement of this magazine? Write to us and send us your work at ihrmagazine2019@gmail.com

Foreword

The PG students' magazine is aptly termed as reflections. **Reflection** of an individual can be seen in any surface that is transparent viz., mirror and clear water. Student's life period is extremely important from the point of view of learning through studying. Unless a student is very transparent, he/she cannot imbibe the values in their life. In that case learning results in scholarly literacy but the real education happens if wisdom accompanies the learning, for that to happen a student should be transparent and studious. Only when a student feels that he/she is empty that they will be able learn from their guides. The attitude should be to learn as much as possible. One of the most important things is hard work and sincerity. Without hard work and commitment, a student should not expect to achieve greater heights. A student who is intelligent, committed and sincere will not succeed if he/she is undisciplined. Hence, indiscipline should never be encouraged. Time management for a student to balance his/her activities is very important. In fact, a student should come to a conclusion and start adapting to self-management. How can we manage anything without self-management, be it emotional or research or any aspect?

Reflections should bring about the true thoughts in a student to the fore. He/she should be free of pre-conceived ideas. In science, analysis is of equal or more importance than the results itself. Every experiment need not result in positive, even if it shows that the results are negative, it is good information. A student should learn to critically analyze the results so that the interpretation becomes proper, the role of the guide in this regard is extremely important. Conclusion should be drawn by thoroughly analyzing the results in the light of the earlier experiment conducted.

Reflection as a magazine should aim at giving full freedom to a student and scientists to express their views. The real scientist in a student should find expression through this magazine. The articles should aim at focusing on new frontiers of science, society as well as the research problems. Students who wish to write in this should give expression to the original thinking, as originality helps oneself to learn and imbibe. Free expressions may give rise to mistakes, but a student should know that without making mistakes either in writing or in communications, we cannot correct ourselves. Repeated searches can only result in real research with good output.

I wish all the best for this venture by the students; hope this will become a good foundation for **Reflecting** ourselves in a better way.



Dr. M.R. Dinesh
Director,
ICAR-IIHR, Bengaluru

Prologue

Dear Students, I begin with congratulating for this wonderful idea of having a magazine of your own. I consider it a privilege to write prologue for this first issue. The title **REFLECTIONS** for the magazine proves the innocence and intent of you students. I am especially delighted by the variety of topics bringing out scientific, cultural and artistic abilities of the students with such flair. Each of the topics are so elite and editing of this issue seems so perfect and professional – shows what you students are capable of.

The ready reckoner of latest varieties and technologies across NARS shall be useful not only for our students but also those outside IIHR who shall start referring this magazine. The last section on memories by Alumni is so heartening; and through this magazine you are providing such a good platform for them to express what it was to be an IIHRian.

I urge all students to use this as an opportunity for freely expressing and sharing your research results, views on contemporary issues, artistic abilities, memories at IIHR and what not. You shall all be remembered for it and be a motivation for future students wanting to come to this prestigious institution. I appreciate all the students who have contributed for issue and especially Ms Nusrat Perveen for taking this initiative and all students for supporting her in this regard. I also take this opportunity to thank our Hon. Director, Dr MR Dinesh who is constantly backing us in all your initiatives and has a special emotion for the students. I sincerely wish that this effort is continued for ever to come and take shape of an integral component of your student life at IIHR.

Hearty Congratulations!

E. Sreenivasa Rao
PG Chairman, ICAR-IIHR

Index

S.No.	Title	Page No.
	Welcome	i
	Foreword	ii
	Prologue	iii
1	Food safety: A shared responsibility <i>Ms. Sujayasree</i>	1
2	Life in a multi-linguistic India <i>Ms. Anamika Gurung</i>	2
3	Let them know, they 'MATTER' <i>Ms. Nusrat Perveen</i>	3
4	The Matrilineal Society <i>Ms. S. Phibahunjai Syiem</i>	5
5	Is it the environment or genes that control biology? <i>Ms. Bhavya</i>	6
6	Travelling SOLO! <i>Ms. Suvedita S.</i>	7
7	Agri-entrepreneurship- Need of the hour <i>Mr. Ikram Haider</i>	8
8	Four Habits of successful people <i>Ms. Sangeetha</i>	10
9	Kathakali - Portraying epics through dance <i>Ms. Anushree</i>	11
10	Tech-news round the agri-world of India <i>Ms. Sangeetha Priya and Ms. Pydi Roshni</i>	12
11	My Battlefield <i>Ms. Anamika Gurung</i>	14
12	Courage <i>Ms. Chetna Jyoti</i>	14
13	The Maiden Who Dreamt of Stars <i>Nusrat Perveen</i>	15
14	Memories and experiences at IIHR <i>Donald Sangma, Raimani Hembram, Subhash Chander</i>	16
15	Creative art and Photography <i>Sushmita Kodli, Jayashree M.J., Ayesha, Deep Lata, Amarnath and Gayathri M.</i>	18

Food safety: A shared responsibility

Sujayasree gives an account on ultimate collaborative responsibility of ensuring food safety in food value chain.

Increased consumer awareness and regulatory focus have transformed India's approach towards food safety. Changing reforms continue to play an important role in shaping the industry to ascertain the procurement, provision and production of food products in order to meet the highest standards of safety and hygiene.

Unsafe food kills an estimated 420,000 people every year, according to the World Health Organization. Globally one in ten people fall sick because of the food contaminated with bacteria, viruses, parasites or chemicals. But, these deaths are preventable by raising awareness about dangers of unsafe food by government, producers, handlers and consumers.

Food safety networks should be strong and we must have a solid legislative base to control hazards in food supply chain. To make sure that legislation is implemented and enforced, we have to rely on rigorous food audits, inspections and surveillances. Food safety decisions and quality management strategies should be based on sound scientific evidences. Even for further effectiveness, food traceability system that covers all stages of food production, processing and distribution to alert the risks in food supply chain must be in force.

To make a sustainable difference in food safety, the actions that it wants, players in the value chain, to undertake is stated:

- ❖ Government must ensure safe and nutritious awareness to public for sustainable production and consumption pattern.
- ❖ Agriculture and food producers need to adopt good practices.
- ❖ Food business operators must safely prepare, transport and store food.
- ❖ Consumers need timely, clear and reliable information on nutritional and disease risks associated with their food choices.
- ❖ Government, Regulators, food industries and consumers must work co-operatively across the food chain to ensure food safety.

“So food safety is a shared responsibility”-Collaboration is needed at many levels, across sectors within a government and across borders when combating outbreaks of food borne illness globally.

"Whether you are a farmer, farm supplier, food processor, transporter, marketer or consumer, food safety is your business.

There is no food security without food safety"

Sujayasree O.J is a Ph.D. Scholar (IARI) at ICAR-IIHR in the Division of PHT&AE and comes from God's Own Country, Kerala. She likes to dance and is well versed in Bharatnatyam. She aspires to be a motivational speaker and a food designer.

Connect to Sujayasree and let her know your thoughts about this article at sujaya.iari2016@gmail.com

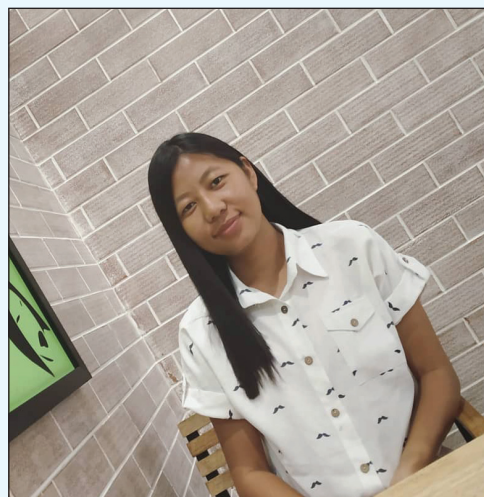


Life in a multi-linguistic India

Anamika writes about her experiences of studying in a different state and how the rich linguistic diversity of India feels like

As a child, I dreamt of travelling all over the world and see everything. I was in 4th standard when my brother went to Orissa on a school tour. I always knew from the day he returned back that I wanted to graduate from outside my state. The reason for this attraction was the diverse culture, food, people and language that he kept talking about almost for a week and of course those beautiful monuments that he had taken picture with.

When I got an opportunity to step out of my state after my schooling, I grabbed it without any second thought. In my college, we were from all over the India though majorities were from North Eastern States. I did have some idea about the Indian diversity, yes, but I had never really thought about how different culture can affect how people act. I had never experienced culture shock before, and it hit me like a brick. The first week was overwhelming, in a good way. There were so many new people, new names, and new accents all in one place. It isn't something that you prepare for; you just have to experience it. The curiosity to learn each-others language came rushing and very soon we started greeting in each other's language. After few weeks, it all calmed down to sense, everyone got to know each other and it didn't take long to establish strong friendship. Exchanging songs, movies, folk stories, history that our birth place carried etc. became like a compulsory activity during evening tea time.



Most of the time conversations flow naturally, no struggling to find the right word or mixing up tenses and such. But there comes a day when everything unravels, word can make you more confused person by mixing each other's meaning, for example 'ella' and 'ille' for the longest time I had been thinking as a same word. At the same time this word learning game acts as a stress removal agent after long day at college. Looking at it in retrospect, my life changed in a great deal. This indeed led me to appreciate unity in diversity. Respects to each other's culture, openness and tolerance are some of the things that installed in me.

It is a unique experience when such a diverse group of people get together. Finding a common word by accident is a fun phenomenon. One of the fun things is sometimes when someone can't find a word, they say it in their language and some of us will be able to understand it, I think the instant connection that we feel which comes with Yessss...!! at that time is indescribable. To experience how language overlaps is completely different from learning about in a classroom.

I am lucky to live in such a diverse environment; I have formed lifelong friendships with people from all over the country. We have bonded over the fact that we are different, and that we learn from each other. I believe that the difference in language and experience gives a better view of the world and builds up our understanding and tolerance for different culture. We are able to build friendship despite differences on the basis of mutual understanding, no matter where we come from. I wish that everyone could have the experience of living in a multicultural environment and get to experience its beauty.

Anamika Gurung is a Ph.D. Scholar (IARI), in the Division of Floriculture and Landscape Architecture at ICAR-IIHR. She comes from Sikkim and dreams of becoming a civil servant and a tool of bringing change to the society where she has grown up. Anamika likes writing, reading and music.

Connect to Anamika and let her know your thoughts about this article at anamikagurung10@gmail.com

Let them know, they 'MATTER'

Nusrat writes about increasing emotional insecurity and the significance of communication

For a few days Hannah Baker was all that was in my mind. I saw people around me and looked for signs of indifference, isolation, fear, longings, of being heard or cared for. I tried answering the questions Hannah asks in every tape she recorded and when I was satisfied with my answers, I wondered if Hannah really didn't know the answers. But undoubtedly, she knew all of it. Everybody knows. But yet she wanted someone to tell her that she was not alone in that quest, that they have been there and have returned and she will be fine too, may be someday. But, no one cared enough to do so. For a few days I hated her, and why would I not? I spent a whole weekend watching her destroy her life, and for what good reasons? Because her friends stabbed her in back every time, she trusted them? Or because her parents were so involved in their failing business and mounting debt that they had no idea what their daughter was going through? Or because they felt her problems were too trivial to be tended because they had REAL issues to deal with? Whatever were her reasons, I couldn't bring myself to understand her. I found myself screaming at her, wanting to ask her "Girl you can do better than this. Don't you have dreams? Can't you just ignore those losers whom you call friends and focus on studies? Is attention really that important to you? Can't you stand alone and fight?" It wasn't fair to make it end like that, I wished Jay Asher had made her protagonist stronger (Jay Asher is the writer of adult fiction mystery novel, 13 reasons why, of which Hannah Baker is the main subject). But soon I realized that it was real. The pain was real. The isolation was real. The Death was real! Hannah killed herself not only because of those 13 reasons she talks about in her tapes, she killed herself because she was a human. A social animal, who needs company, who craves for love, for attention, for care and who, cares. People lie when they say they don't give a damn to what society thinks, but in reality, we care, indeed we care a lot more than what we think we do.



My research work started and eventually Hannah Baker was out of my mind. And then this winter, I met Bianca, (the protagonist of a 2015 American teen comedy, The DUFF, based on the novel of same name by Kody Keplinger) and Hannah Baker was alive in me again. Bianca, was facing almost the similar situations as Hannah and I was afraid of watching another teen slit her wrist. But then there was this miracle and I found Bianca fighting. She did not break when she came to know that she was the DUFF (literally, the Designated Ugly Fat Friend; but in meaning the least popular and most approachable friend among a group of more popular and talented friends) or maybe she trembled a little, may be a little more, but she was there again. She let the world know she wasn't a loser, she loved who she was, she didn't really give a damn to what people (who don't actually know her) think she was. And I was in an absolute awe of her when she said **'we should be true to our identities and should never let others decide what our worth is because when people are mean to us, they are actually reflecting their own insecurities.'** From that moment on, Bianca was my heroine. I started counting all those wrong steps Hannah took, all the efforts she put trying to fit in a society where she never actually belonged, all the opportunities she missed to redeem herself, all the decisions she made that pushed her one step closer to death! I compared both of them and was convinced that Hannah was wrong. I called my brother (my one and only refuge when it comes to understanding what happened in a fiction and why it happened), I told him about Bianca and my new theory about Hannah. But he discarded my theory telling that I was being biased towards Hannah and cautioned me, if I am thinking to write about that in my students' magazine then I am definitely tarnishing the image of Hannah (and ethically I shouldn't do that to a dead person). I tried to reason him but he convinced me that I was too SANE and LOGICAL to understand things from the perspective of a person who is contemplating Suicide. He told me to connect the DOTS! Why Hannah didn't behave the way Bianca did? Why Bianca didn't think draining herself out of blood in the bathtub would be better than facing the world and standing up for her identity and self-worth?

And the answer was not that tough. I knew it from the beginning. Hannah was just as lively as Bianca, what she didn't have was friends like Jess and Cassy to whom Bianca could return to, a mother who told her she is worth more than brooding over things that other people say. Hannah just didn't have the people who could tell her, she matters, that her existence makes difference in their life, that they care. And they care enough!

We all, at some point feel Hannah in us. We feel we are no longer wanted. We feel nobody really cares, and if some do, then they just don't care enough to let us know. We feel insecure. We feel everything a sane person will never feel. And at that moment we don't need criticism, we don't need logic, we don't need to know that we are overacting or we should be positive.

All we need is, someone who listens to us without giving a certificate of insanity, without telling us that there are millions out there who are far more destitute than we are and hence, we should be more thankful. We need people who can help us identify ourselves in those moments when we seem to forget our own worth. We need family. We need friends.

Things are kind of hectic these days. We are busy making our living, buying cars, building houses, getting promoted. Parents feel if they give their children good food, expensive clothes, gadgets, good schooling, that is enough for them to qualify for the best parent award. The grownups think, as long as a part of their pay check goes in fulfilling the needs of their old man and woman, they are all set in their duties. But, unfortunately that's not enough.

Bullying is real. Peer pressure is real. The Rat Race is real. The maddening efforts of fitting in, is real. Emotional insecurity, loneliness and the feeling of seclusion is REAL!

Suicide can never be glorified, but at the same time we cannot deny that it exists. We as friends, as family, as fellow human need to reach out to each other, to empathize, to be compassionate. Let's listen to what our loved ones have to say, what bothers them, let there be more love and less judgments.

Life is precious, let's protect it from perishing in the hands of ignorance and arrogance. If you love, tell them you are there, no matter what. If you care, let them know you do. **Let them know, they MATTER!**

Nusrat Perveen comes from Jharkhand and is a Ph.D. Scholar (IARI) in the Division of Fruit Crops, ICAR-IIHR. She loves reading and writing is both her hobby and refuge to express the things she thinks, matter. She wants to discover people, understand their psyche & behaviour and dreams of becoming a writer who can bring a change in the world she lives, through her PEN.

Connect to Nusrat and let her know your thoughts about this article at nusratperveen.8oct@gmail.com

The Matrilineal Society

S. Phibahunjai Syiem shades light on a society which is rare and beautiful

Meghalaya also known as ‘The Abode of clouds’, a home to the Khasi, Jaintia and Garo people, a place where rain is just another normal day event, known to have the cleanest village in Asia ‘Mawlynnong’ and the wettest place in the world ‘Mawsynram’. The uniqueness however, lies in it being a matrilineal society with property, names and wealth being passed on from mother to daughter rather than father to son. A common misconception is that the female takes up the entire role of the man in a household but in reality, daughters have traditionally been given more privileges and benefits as our ancestors believed that **‘we are born out of our mothers’**. Having had the opportunities to grow academically and meet people from different places and culture one can understand the importance of being from such a society. Many a times the response from friends will be astonishing until I convince them otherwise with facts and proofs.



Women have come a long way to where we are today and to be given equal rights and opportunities; there are numerous examples of women who refused stereotypes and to stick to the status quo and made their own marks and distinctions. Our society is gradually progressing towards women empowerment and accepting the significant role they play. I feel fortunate to have been brought up in a society where there is no biasness when it comes to gender, where the birth of a daughter is considered a celebration and a sight to behold and perhaps, my society can serve, but a small example if not to the world but to the other regions of our country.



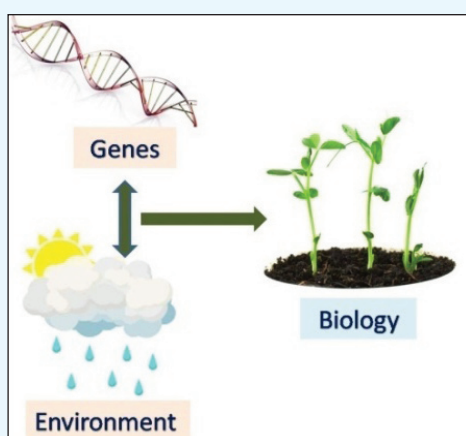
S. Phibahunjai Syiem (Phiba) is a Ph.D. Scholar (IARI), Vegetable Science at ICAR-IIHR. Borne and brought up in Meghalaya, Phiba loves singing and is a guitarist with a natural love for adventure and nature.

Connect to Phiba and let her know your thoughts about this article at phobegirisjiem@hotmail.com

Is it the environment or genes that control biology?

Bhavya talks about epigenetics and decodes why it's not fair to play the blame game always with the genes

A newspaper once reported that the character of being lazy can be blamed on a person's genetic makeup. I was excited to tell my friend, who used to scold me every time when I was late in getting ready for classes or being late in assignment submission and so on. Being said that many of us rely on genetics as an excuse and find difficulty in changing our behaviour. Dr. Bruce Lipton studied epigenetics and concluded that we do not have to be at the mercy of our "genes". It is complicated to decide whether it's the genetics (DNA) or the environment which holds primacy in controlling the biology. Way back in 19th century Lamarck hypothesized the theory of inheritance of acquired characters, which explains, when an organism in its life time acquires any character either by use or disuse of organs, those characters will pass on to their off springs. In his time, he did not know DNA (Genome) as genetic material. Now we have enough knowledge that genome is the primary level of long-term memory storage unit and the epigenome is the heritable modifications that are in the DNA or protein holding



the DNA. In epigenetics certain biochemical marks (DNA methylation, chromatin modification) acts as secondary layer of storing memory and create diverse biomolecules (or proteins) to coordinate multiple actions as a response to the environmental cues and to different developmental needs. To explain this communication route (signal transduction) with respect to cell, it's all about the primacy of the environment, its start with environmental signal to the cell nucleus of any organism and again backward path. The first exchange of information starts at plasma membrane (considered as the brain of the plant cell) which decides whether to allow the particular signal or information received to be sent inside the cell or not. Once the plasma membrane takes its decision, the signal will be communicated into cell with the help of key messengers which includes enzymes and secondary metabolites. These molecules

decode the message and activate specific key regulators of gene expression or repression based on what is best for the cell system. The reply can be communicated back by other members of the cell which take specific pathways. One can't say either yes or no to the question whether it's the environment that is controlling these messengers because the order of the flow of regulatory routes are bidirectional and case specific. For example, let us take two identical plant genotypes and give different nutritional condition, the result will be altered growth pattern. Same way if we take different genotypes and give same nutritional condition, then also we could observe different growth patterns. This gives an idea that it's not the genome alone or the environment alone that is controlling biology; it's the continuous interaction of both genes and environment that is responsible for particular phenotype (Biology).

Bhavya, C. from Karnataka is a Ph.D scholar (UAS GKVK Bengaluru) and is doing her research work in MBL1, Division of Biotechnology, ICAR-IIHR. Her hobbies include gardening, nature photography, reading literature and writing short stories

Connect to Bhavya and let her know your thoughts about this article at bavyareddy10@gmail.com

Travelling SOLO!

Suveditha S. tells about the adventures of travelling solo and what it takes to be a wanderer

Wanderlust. Adventures. People. Food. Ideas. Connect. Experience. All, my ultimate bucket-list wishes. Want to go on a trip?! Yes, yes. It's always a yes to travel. Group trips are fun. I have been on many group trips, but I have planned more group trips than the ones I could go. After many never happening group plans, on an ultimate boring weekend, a thought stroked me. What if I travel solo? Is it safe? Can I do this? My mind was full of questions! I started doing some research online, finalized the plan and packed my bags. Obviously cooked up some story to tell my parents just not to stress them out with my new idea. Gathered all my courage and started off on my first ever solo journey. I went to one of the safe listed places- Hampi! Roaming around, meeting new people was fun and so was exploring the Vijayanagar Empire 'Hampi'. The happiness of accomplishing the task was immense! I felt confident.

From then on, I started planning more solo trips. Started with baby steps and covered 13 states and 3 UT's in 3 years' time. My wish is to cover entire India because our country has many incredible places we ought to see. I never miss an opportunity to travel. I don't waste a single holiday. Because there are lot many places to see in a very less time. Exploring and capturing memories. Sometimes I wonder; is it my interest in travel that has made me capture good photographs or my interest in photography that has made me travel! But I enjoy both clicking pictures and travelling.



When it comes to working or studying, everyone asks me how I deal with time management and also the commitment towards work, while I travel. But then I manage my professional life such that it does not affect my personal interests. So, I plan to do things on time and stick on it. Doing a Ph.D. in Biochemistry and with all my extra circular activities; I find time to travel. Travelling keeps me sane!!!

I have become a better version of myself. From using technology to travel (checking online for budget friendly and safe stays, having my phone as my best travel mate - my phone camera's timer mode helps me click those savvy photos of mine), to planning everything about the trip, meeting new people, creating memories; I have lots of experiences - which a millionaire cannot buy.

Solo travelling refreshes you; it challenges you. It's an adventure, an opportunity to expand your horizons, meet new people, to discover stuff about yourself and the world you never knew existed.

Maybe I could write about the safety measures, accommodation, budget travels, benefits of solo travel, problems bound etc. in the up-coming issues. So, stay tuned!!

Suveditha S. is a Senior Research Fellow in the division of Plant Pathology (ICAR-IIHR) and a

Ph.D. Scholar in Biochemistry, Jain University, Bengaluru, Karnataka. She loves dancing, travelling and exploring the world around her.

Connect to Suveditha and let her know your thoughts about this article at suvi.ss519@gmail.com

Agri-entrepreneurship- Need of the hour

Ikram Haider talks about the status and scopes of Agri-entrepreneurship and why it's time we start discussing it more

India is an agrarian economy with rich resources of traditional indigenous knowledge, biodiversity and human capital. It has a huge potential for promoting agri-based innovations that promise solutions to many of the current challenges faced by the sector. In order to exploit the untapped potential and unexplored rural resources, agri-preneurship has a huge scope.

Current status/concerns of Indian agri-business

Indian agriculture is faced with several challenges ranging from disjointed supply chain, low farm realization, inadequate processing and marketing infrastructure to climate change and land degradation. Some of the other concerns include- use of conventional and outdated technologies by the farmers, unstructured lab to farm connections and poor credit flow reach to the farmer thus, hindering exploitation of its actual potential. These problems could prove to be a goldmine of opportunities for an agripreneur to redefine the ways we have to deal with the production and post-harvest processes.



Agripreneurship

Agripreneurship is the entrepreneurial process taken up in agriculture or the allied sectors for better output or economic earnings by creating new ways of doing things, adopting innovation (new method, technique, process or product) and thereby tapping new market opportunities. This entrepreneurial activity leads to the creation of new products, services and systems that add value to bring about significant changes in income, employment and livelihood security; not only in rural India but also to fuel the entire economy.

Opportunity

The opportunities lies in areas like how to increase crop production, improving the nutritional value of the crops, reduction in input prices for farmers, improving the overall process-driven supply chain, reducing wastage in the distribution system, making easy farm mechanization available, and enabling last mile connectivity of farmers with the non-farming population by interlinking the consumer and producer.

Financial and Technical support

- **Agripreneurship Orientation Program-MANAGE**, Hyderabad invites applications from Startups and Idea-stage Entrepreneurs for two months training, mentoring from experts, technical & business support, followed by up to Rs.25 lakhs grant-in-aid and incubation support for selected startups and Rs.10,000 per month stipend and up to Rs.5 lakhs grant-in aid to selected idea-stage entrepreneurs.
- **Agri-entrepreneurship Agri-Clinics and Agri-Business Centers (AC&ABC) Scheme** providing 45 days free residential professional training program on different agribusiness ventures.
- **Some of the key Accelerators and Incubators for agritech sector in India:** ICAR SAU's- ITMU and BPD units, Pusa Krishi Incubator- ARISE, SAMARTH, UPJA and MAITRI, Agri Udaan, a-IDEA-NAARM, Startup India, Agri-Bionest, iHub-ICRISAT, NAAVIC, SANKALP

Horticulture emerging as breeding ground for innovations: There are three broad areas in need of agtech innovation in Indian horticulture, presenting an opportunity for entrepreneurs and investors:

1. Aggregation of farm produce: There are about five to seven intermediaries between the farmer and the consumer eating away 65-70% of the margins. Sourcing directly from farmers, aggregating near consumption areas, and selling directly to the consumer, retailer or hospitality industry can prove to be highly rewarding. Even exports of high-quality produce with attractive packaging can be thought of.

Startups- Sabziwala, MeraKisan, Dehaat

2. Input retail: Horticultural crops are input-intensive and farmers need hybrid seeds, pesticides (or organic inputs), micro-irrigation and mechanization. The input channels, therefore, need disruption and business model re-engineering to meet farmer needs for horticulture farming. **Startups-** Bighart, AgroHub, Crofarm

3. Tech Enablers– Hardware such as Drones, sensors, servers ag. analytics, high tech farming, hydroponics, automation and technology-based solutions are the answers to the burning problems of the farmers. Here are a few examples:

- **IoT Enabled Agritech Startups:** Smart farming, including high-precision crop control, data collection, and automated farming techniques, will remove inefficiencies and bolster productivity. Information on crop yields, rainfall patterns, pest infestation and soil nutrition can be used to improve farming techniques over time.

– **Imagery-based** grading of potatoes by **Agricix**

- **Farming-as-a-Service (FaaS) based Startups-** Offering farming services and machinery rentals to farmers on a pay-for-use basis-thus making the techniques more affordable for a majority of small farmers.

Startups- Goldfarm, Ravgo, Oxen Farm Solutions, and FarMart.

–**Cold chain solutions** – Post-harvest losses are significant (30-40%), thus, cold chain solutions have opened opportunity for startups such as **Tessol**, which has developed cold chain solutions using Phase Changing Material to bring the operating cost down by 60%.

Ecozen has developed solar-powered micro cold rooms ideally suited for on-farm storage.

Processing industry: Food and beverage industry is the only industry which has never faced a slowdown in demand. At present processing is done at primary level only and the rising standard of living expands opportunities for secondary and tertiary processing of agricultural commodities. Growing health consciousness among consumers presents an opportunity whereby healthy food products can be promoted. Some of the healthy food replacements could be:

- Sugar-rich chocolates with Fruit bars (Mango, papaya, guava and their blends)
- Artificially sweetened with based candies: Amla candies
- Sugar-rich soft drinks with carbonated fruit beverages (mango, pomegranate, custard apple, orange, grapes etc.)
- **ENERGY FOOD** (wheat, legumes fortified with vitamins and minerals) developed by CFTRI Mysore can be used as a Ready to eat snack anytime by students, working class and children.
- Dehydrated food products for metropolitan cities and exports
- Fruit based ice-creams.

The way ahead

- Internet usage by 2020 in rural India is expected to be 315 million and it may lead to penetration in rural areas and that would be the inflection point for the agtech market in India. Agriculture start-ups can unleash umpteen opportunities to strengthen the supply chain in Indian agriculture. We really need to move with a sense of urgency to apply these new tools to accelerate the pace of agriculture development.

Ikram Haider is a M.Sc. student (Vegetable Science) at UHS, Bagalkot. He loves reading and investing.

Connect to Ikram and let him know your thoughts about this article at ikram007haider@gmail.com

Four Habits of successful people

Sangeetha explores the complexities of success and what it truly means

One day, a man went to Socrates and asked him the tips to become successful. Socrates remained silent for a while and took the man to the pond nearby. Suddenly he grabbed the head of the man and drowned him into water. The man was struggling to breathe and tried a lot to come out of water. Socrates then took him out. The enraged man angrily questioned Socrates why he tried to drown him in water. Instead of answering he asked the man, 'what was the most important thing to you when you were in there? Agitated, the man replied, breathing or else he would have died. Socrates smiled and told 'success will come to you when you are desperate for it putting to it all the might you have.'



There is no single way to be successful. What works for you might not work for someone else but there are some basic things one can follow to improve the chances of being successful in life. Winners have some qualities which help them to win the game of life and the most important of them are:

Attitude: A study revealed that the attitude of employees accounted for 85 % of job promotion and intelligence accounted only for 15 % because attitude decides how to handle tough situations in life. So, people with positive thinking and positive attitude can easily face their problems and keep on achieving.

Grabbing opportunities: Once, there was a heavy flood in a village and a poor villager prayed God to save his life. First, a group of people urged him to evacuate the place, the villager told that God will save him. Then, some people evacuating in car tried to help him but the villager refused. Finally, a group of rescue soldiers came in helicopter for helping him the villager refused their help too. At last, the poor villager died. He asked God why he did not help him. God replied that the villager didn't use the opportunities he was given.

Success: A man who failed in business at 21, defeated in election at 22, lost his fiancée at 26, suffered from nervous breakdown at 27 and considered as failure person up to 49 became one of the best presidents of America at 52 who is none other than Abraham Lincoln. Even though the whole world considered him as failure, Lincoln didn't think himself as failure which made him the most memorable winner in the world. To be successful one has to overcome the four main obstacles fear, lack of motivation, low self-esteem and ego.

Goal setting: A young man saw an old man on road and asked him where the road goes. The old man questioned where the young man has to go. The man replied that he doesn't know where he has to go. Then the old man told that you can go in any way and it doesn't matter. Hence, setting goals and striving hard to find and walk on the road that can take you to it is paramount to success.

There are many different tactics for how to be successful in life, but the strategy that works best for you depend on your view of success itself. Your individual definition of what success is exactly may vary, but many might define it as being fulfilled, happy, healthy and loved. It is the ability to reach your goals in life, whatever those goals may be. I cordially wish you all to set the goals, plan for the goals, put into action and succeed in life. Wish you all success!!!

Sangeetha Priya S., a resident of Tamil Nadu, is a Ph. D. Scholar (IARI) in the Division of Floriculture and Landscape Architecture at ICAR-IIHR. She loves dancing and believes in dreaming and working to make her dreams come true.

Connect to Sangeetha and her know your thoughts about this article at sangee1136@gmail.com

Kathakali-Portraying epics through dance

Anusree unravels why 'Kathakali' is more than just a dance-form

The 'Kathakali' face is so familiar. But people often confound about the Indian state to which this art form belongs to. While Kerala being the right answer, Tamil Nadu and Karnataka are the other preferences. If you are one among them, this article is for you.

Kerala is the home of several traditional dance and dance-drama forms, the most notable being Kathakali. The term *Kathakali* is derived from *Katha*, which means "story or a conversation, or a traditional tale", and *Kali*, which means "performance and art". The dance symbolizes the eternal fight between good and evil. It is associated with story-telling form of art. Similar to other Indian classical dance arts, the story in 'Kathakali' is also communicated to audience through excellent footwork and impressive gestures of face and hands complimented with music and vocal performance. However, it can be distinguished from the others through the intricate and vivid make-up, unique face masks and costumes worn by the dancers and also from their style and movements that reflect the age-old martial arts and athletic conventions prevalent in Kerala and surrounding regions. This tradition of dance-drama has been popular in the Malabar region primarily in the form of Krishna and Rama ballets. Kathakali is traditionally performed by male dancers. Even female roles in the story line are performed to perfection by male artists. It is developed in courts and theatres of Hindu regions, contrary to other Indian classical dances which predominantly developed in Hindu temples and monastic schools. Although not clearly traceable, this classical dance form is considered to have its origin that trace back to 1st millennium CE or before.



A traditional Kathakali play typically consists of two interconnected parts, the third-person *Shlokas* and first-person *Padams*. The *Shlokas* are in Sanskrit and describe the action in the scene, while *Padams* are dialogues in Malayalam (Sanskritized) for the actors to interpret and play. The traditional plays were long, many written to be performed all night, some such as those based on the *Ramayana* and the *Mahabharata* written to be performed for many sequential nights. However, others such as the *PrahladaCharitam* have been composed so that they can be performed within four hours. Modern productions have extracted parts of these legendary plays, to be typically performed within 3 to 4 hours.

For performers, fans and audiences, Kathakali is much more than a dance form. It is an act of devotion portrayed through art and is mastered through years of patient learning and practice. Kathakali evokes imagery of vibrancy, opulence, flamboyant costume and expressive art.

Anusree Anand is a Ph.D. Scholar (IARI) at ICAR-IIHR in the Division of PHT&AE and comes from the land of 'Kathakali', Kerala. Dancing is her passion she is well versed in Bharatnatyam.

Connect to Anusree and her know your thoughts about this article at anusreehorti@gmail.com

Tech-news round the agri-world of India

Sangeetha Priya and Pydi Roshni (Ph.D Scholars, IARI-IIHR) provide a ready reckoner of technologies and varieties recently developed at different horticultural research stations around the country

NRC Grapes, Pune:

- **Decision support system for grapes** (2018): To provide farm-specific advisory to the farmers, decision support system (DSS) were developed for irrigation and nutrition management, pest and disease risk assessment and advisory for their management. It provides recommendations to the grower based on the crop data, farm data and prevailing weather conditions that will support or assist grower's decision-making capacity. Application programming interface (API) has been developed which processes inputs given by licensed mobile or web application and gives outputs for use in the application.
- **ManjariMedika** (2017): PusaNavrang x Flame Seedless; black seeded, coloured juice purpose variety
- **ManjariKishmish** (2017): Clonal selection from KishmishRozavis; White seedless, raisin purpose variety

NRC Pomegranate, Solapur:

- **Extraction process of virgin pomegranate seed oil** (2015-16): From remaining portion of fruit after juice extraction which is called as marc.
- ***Penicillium pinophilum***(2015-16): A novel micro-organism which improves nutrient uptake by pomegranate plants.
- **Preparation of sparkling wine from pomegranate** (2014-15)
- **'Solapur Anar' mobile app** (2017): to disseminate the information of various technologies and to answer queries on pomegranate farming
- **'Solapur Lal' variety** (2017): High iron, zinc, vitamin c and anthocyanin content; precocious bearing

NRC Litchi, Muzzarfurpur:

- **NRCL Microbial Consortium** for enhanced growth, productivity and quality of litchi (2018)
- **Thermocolpackaging** (2018): A packaging solution to maintain freshness and quality of litchi fruits
- **Gandaki Sampada** (2017): cracking resistant
- **Gandaki Lalima** (2017): highly nutrient efficient strain
- **Gandaki Yogita** (2017): tolerant to hot waves and fluctuations, fruit borer and fruit cracking, suitable for high density planting

CCRI, Nagpur:

- **Shoot tip grafting:** To eliminate virus and virus like diseases in citrus
- **Micro-budding:** New propagation technique to minimize the citrus nursery phase
- **Standardization of top working technique** on mature citrus scions and rootstocks for early evaluation of newly evolved varieties by breeding and *in vitro*/tissue culture techniques.
- An exotic rootstock '**Alemow (*Citrus macrophylla*)**' was found to be most promising rootstock of Nagpur mandarin under black clay soils of central India condition.
- **'Ready Reckoner'** has been developed which indicates different physic-chemical characteristics of soils and its influence on the performance of Nagpur mandarin.

NRC Banana, Trichy:

- **Udhayam:** Leaf spot resistance, high yielding
- **Saba:** Drought tolerance, high yielding
- **Bangrier:** Short duration, high yielding
- **NamwaKhom:** Extremely dwarf variety, propping not required
- **Popoulou:** Rich in carotenoids, used for preparation of value-added products
- **Manoranjitham:** High yielding, fragrant variant
- **'KelaVruddhi':** Low cost, farmer friendly micropropagation method for mass multiplication of elite clones; alternative to tissue culture propagation
- **Stem trapping technique:** To monitor and control banana weevils

IHR, Bengaluru:

- **Arka Pink, Arka White, Arka Nesara, Arka Ashwa:** Varieties of Gerbera
- **Arka Suprabath:** Double cross hybrid in mango (Amrapalli x Arka Anmol)
- **Arka Saka Nivaraka:** For prevention of spongy tissue in Alphonso mango
- **'Tenali':** Salt tolerant acid lime variety
- **Arka Pari:** Photo insensitive, French Marigold variety with dwarf plant
- **Arka Honey:** Photo insensitive, French marigold variety with double coloured flower.
- **Arka Chenna:** Crossandra variety
- **Arka Sinchana:** Highly floriferous everblooming floribunda rose for garden display
- **Arka Sharmeeli:** Everblooming floriferous Hybrid T-rose identified for garden display
- **Arka Kinnari:** Everblooming floriferous Hybrid T-rose identified for garden display
- **Arka Pratham, Arka Ranjini:** Gladiolus varieties
- **Arka Abhed:** High yielding F_1 hybrid with multiple disease resistance to Tomato Leaf Curl Disease ($Ty2+Ty3$), Bacterial wilt, Early blight and Late blight ($Ph2+Ph3$)
- **Arka Siri:** Muskmelon high yielding variety
- **Arka Yojith:** White onion variety developed for dehydration
- **Arka Nikita:** Okra F_1 hybrid developed through genetic male sterile line
- **Tissue culture of Ney Poovan**

IIVR, Varanasi:

- **Hairy root transformation:** A rapid method to test genome editing efficiency of CRISPR/Cas9 guide-RNA constructs
- **CIARI-Bioconsortia:** Talc based microbial formulation for the management of solanaceous bacterial wilt disease

My Battlefield

by Anamika Gurung

The greatest DEVIL is one within you not that lies outside
That is where FIGHT should be fought
The true ANSWER lies within, that is where question should be asked
My grandpa said once
One can never find answer in agitated mind
STILLNESS is what gives you the answer
Spending time in nature is what he used to do at least an hour
GRATITUDE was his mantra
And this corner has become my NATURE
My BATTLEFIELD

When my MIND is too scattered, this corner has been my organizer

When I am lost, this has been my HOME

When I run out of BREATH, it has provided me the fresh air I have been longing for

When I am hopeless, it has given me the rays of HOPE

When I am too busy searching for HOME within others, it has reminded me to search within myself

This corner has been my battlefield to fight devils within ever since I have stepped into this place.

This corner has become my bridge to connect with my grandpa's greatest gift.



Anamika Gurung is a Ph.D Scholar (IARI), in the Division of Floriculture and Landscape Architecture at ICAR-IIHR. Anamika's quest of searching meaning in life has brought her closer to words and in them she now finds the bridge to connect to herself and all that is important to her

Courage

by Chetna Jyoti

Let the hate dissolve,
Let the fight resolve,
Focus on what matters,
Let nothing else flatter.
Everything has a lesson behind,
Don't turn your back and become blind,
Let the message seep in and emotions subside,
People will be critical,
But you be wise,
Don't take to heart even from people who are very nice.
Everyone is limited in capacity,
And no one is like you.
Everyone makes mistakes,
Bold who apologies for their takes are very few.
They might have wronged you,
They might have drowned you,

Don't let them succeed,
Keep moving ahead because you need to breathe.



Chetna Jyoti coming from the state of Himachal Pradesh is a Ph.D. Scholar (IARI) in the Division of Floriculture and Landscape Architecture at ICAR-IIHR. She loves expressing herself through her poetry

Connect to Chetna and her know your thoughts about this poem at chetna_jyoti28@yahoo.co.in

The Maiden Who Dreamt of Stars

by Nusrat Perveen

Blow past me 'O' breeze across the vale
Blow to fill me and soothe me of my bale
'O' breeze come to me
As you go round the moors and caress the waterfowl
Come and embrace me and allay my wretched soul.

'O' breeze shall I relate to you,
the tale of a highland lass
of her dreams and woes, her approbation and abash.

'O' breeze stay! and I will tell you how her heart would ache
Through those gloomy autumn nights
with her soul craving love and her flesh contending the fake.

And shall I tell you... 'O' breeze!
How along the spring she sat aloof and wept
When you played and brushed the daffodils,
she sat and mourned, for lies and perfidies...
her maiden her could not intercept.

'O' breeze... for far must you blow
Will you take on you this tale
as you wander through the hills, the woods and the dale...
... of the maiden who dreamt of stars,
but, the 'GRAVE' beneath the weeping willow
was as far as she could go!



Nusrat Perveen coming from Jharkhand is a Ph.D. Scholar (IARI) in the Division of Fruit Crops at ICAR-IIHR. She made poetry her best friend from the day she fell in love with solitude.

**Connect to Nusrat and get more of her poems at
www.poemhunter.com**

Memories and experiences at IIHR

Alumni of ICAR-IIHR share their moments at IIHR and reflect what it means to them now that they have earned their degrees and crossed the campus gates

"A place is only as good as the people you know in it. It's the people that make the place". This quote perfectly sums up my stay at IIHR, Bangalore. I was blessed to have been a part of the first batch of students of IARI, New Delhi to study at IIHR, Bangalore. I still remember clearly the warmth and love with which we were received by one and all at IIHR and am indebted to my teachers for their patience and guidance in doing so. It was a privilege to learn from some of the most distinguished scientists in the country, which made everything just that much more enriching and worthwhile.



Also, I had the good fortune to have the classmates and juniors that I did. Meeting students from different states, interacting with them, learning about their cultures made me grow as a person. Having fun in hostel, sitting together for tea, going out for bike rides and playing sports together are some memories that I'll always remember. The friendships made are some that I'll cherish forever and one which made it more emotional when I bid adieu to the institution. Time flew by quickly and sometimes I still wish I could go back to those days and live them once again. Overall, life at IIHR was a wonderful experience and the only thing that I'd like to tell the students out there is to make the most out of it and to remember – the learning never ends.

Donald Sangma, from the batch of 2014-15, Division of Fruit Crops, is among the first batch students' of IARI to study at ICAR-IIHR. He is presently working as Assistant Manager, NABARD and is posted in Dimapur, Nagaland.



'We were the first batch of IARI research scholars who came to ICAR-IIHR, Bengaluru. It was a bitter-sweet feeling at first since we together went through hardships for establishment of accommodation, food facility and transportation. I consider myself to be blessed for having such an amazing and very supportive scientists and staffs of ICAR-IIHR who contributed wholeheartedly to make our stay as comfortable as it could be. We got the best of everything, be it teachers, research facilities and field exposures. Apart from studies and research work our batch also explored nearby places in Karnataka, Tamil Nadu, Kerala, Maharashtra and Goa. Altogether our stay at ICAR-IIHR, I consider it as a golden period of my life.'

Raimani Hembrom from the batch of 2014-15, Division of Floriculture and Landscape Architecture, is also among the first batch students' of IARI to study at ICAR-IIHR. She is presently working as Assistant Professor-cum-Junior Scientist in the Department of Horticulture, Birsa Agricultural University, Ranchi, Jharkhand.

'I have a lot to tell about life at IIHR, Campus. Words can't define completely those 3.3 years of my life that was spent in PG Accommodation and without a slightest bit of doubt they are the best days of my life. I will cherish forever the memories of those fun filled moments, small parties, studious environment, asking all to come at sharply 11:55 pm for birthday celebration, the midnight tea party, fulltime funny discussions between vegetable wale and fruit wale on biotech work or production work, paper rating (NAAS>6) and most importantly discussing mess issues (the modest hostel room used to become a heated parliament). I really enjoyed the company of IIHRians (Responsible Scholars of Horticulture). I think nowhere scholars have place like this where one can have this much opportunities for fun and study.

The scientists of this great institution had a lasting effect on me for the knowledge they imparted, the wisdom they shared and the self-confidence they inspired. I never experienced any lacking in facilities with respect to research lab, field, hostel, medical, food at this prestigious institute. The entire faculty and other members of this institution are very cooperative. I got a lot of love and support from IIHR family and it made my 3.3 years a lifelong cherishable memory.



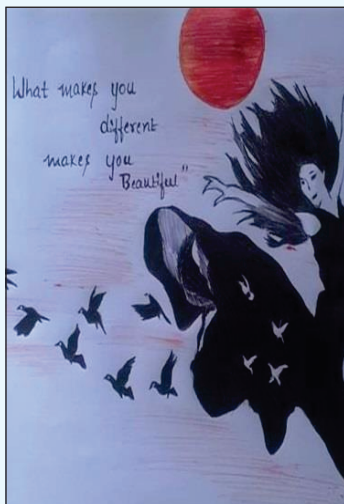
Dr. Subhash Chander from the batch of 2015-16, Division of fruit crops is one of the most remembered seniors owing to his friendly personality and responsible attitude towards the issues related to PG-accommodation, IIHR. He is presently working as Scientist (Horticulture) Punjab Agricultural University, RRS, Abohar, Punjab

A student comes to an institute with myriad hopes, excitements and sometime few apprehensions. A Ph.D. scholar, by the end of his last academic degree, experiences almost everything, the world of academics and intellect has to offer. The sleepless nights spent thinking of life outside campus and what challenges await there, make the days vibrant and more meaningful (ironical but that's what I feel). Hence, we are making an attempt to know, from those who have crossed those beloved gates which are protecting us now, what they recollect of the life here and how they shaped their futures by what they learned here.

We will bring more stories from IIHR alumni and their present whereabouts in our coming issues.



Painting by Sushmita Kodli



Sketch by Jayashree M.J.



Quelling by Ayesha



Dry flower art by Deep lata



Amarnath; Don't judge each day by the harvest you reap, but by the seeds you plant

Different shades of light –Gayathri



Paper art –Gayathri



Gayathri M. comes from Tamil Nadu and is a Ph.D. Scholar (Jain University), working in MBL-1, Division of Biotechnology, ICAR-IIHR. She loves dancing, photography, painting and paper craft is her passion. She has the talent to bring to life the dulllest piece of paper and make them convey her stories.

Let Gayathri know your thoughts about this paper craft at gayathri.bt89@gmail.com

Snaps of Life at IIHR



IARI-IIHR batch-2014-15



IARI-IIHR batch 2015-16



IARI-IIHR batch-2016-17



IARI-IIHR batch-2017-18



IARI-IIHR batch-2019-20



IARI-IIHR batch-2014-15, a trip to Munnar, Kerala