

15th and 18th centuries. The exhibition was a collaboration between the National Museum and The Aesthetics Project, and had more than a hundred objects drawn from the National Museum's collections of paintings, manuscripts, textiles, metalwork, arms and armour, decorative art, as well as a set of ragamala paintings borrowed from the National Gallery of Modern Art. The exhibition and the accompanying symposium spearheaded by Singh brought much needed attention to Deccani arts, a subject that is often overshadowed by the voluminous studies on Mughal and even Rajput arts. The exhibition and the symposium culminated in the publication of the edited volume, *Scent Upon A Southern Breeze: The Synaesthetic Arts of the Deccan*. As part of her course 'On curating', Singh also co-curated two acclaimed exhibitions along with her students and colleagues from the School of Arts and Aesthetics, JNU. 'Where in the world' in collaboration with the Devi Art Foundation, Gurgaon in 2008–09, addressed critical questions of the impact of globalization and economic liberalization on contemporary arts in India. The exhibition 'Waste' in 2014 was conceptualized by Singh, wherein students with the help of the NGO 'Chintan' interacted with ragpickers to gain perspectives on the un-

seen afterlife of that which is discarded, demonstrating once again her preoccupations with objects hidden out of sight.

#### Awards and honours

Kavita Singh has been awarded numerous grants and fellowships, most notably from the Getty Foundation, Los Angeles; the Clark Art Institute, Williamstown, Mass; the Victoria and Albert Museum, London and the Asia Society, New York. More recently, before she assumed the stewardship of the School of Arts and Aesthetics as Dean in 2017, she had received the Clark–Oakley Fellowship, Williams College and Clark Art Institute, 2015–16. She is also a member of Advisory Council, Research and Academic Programmes, at the Clark Art Institute. Since 2012, she has been a member of the India–Europe Advanced Research Network group on the History of Museums established by the Wissenschaftskolleg (Institute for Advanced Studies), Berlin; and member, Advisory Board, *Archives of Asian Art*, an international peer-reviewed journal published by the University of Hawaii and Asia Society. She was Advisor to South Asia Initiative, Guggenheim Museum, New York, 2011; member of Transcultural Visuality Learning Group at the Cluster of Excel-

lence 'Asia and Europe in a Global Context', University of Heidelberg, 2010–2012 and member, Advisory Board, *de Arte*, Visual Arts Journal of the University of South Africa Press, 2008–2013. Between 2009 and 2014, she headed a partner group between School of Arts and Aesthetics, and Max Planck Institut-Kunsthistorisches Institut, Florence, to run a five-year project titled 'The temple and the museum: cross-cultural sites of art'.

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#### MEETING REPORT

## Doubling farmers' income\*

Keeping in view the present scenario of agricultural production system and the need of the hour, a conference on doubling farmers' income was organized. More than 300 students and about 95 teachers/scientists/researchers from 15 national institutions across the country participated in the conference. One researcher from Tanzania was also among the participants.

\*A report on a two-day conference under the major theme 'Doubling the Farm Income: Challenges and Strategies' organized by Agrivision, a non-profitable organization of agricultural scientists, researchers and agricultural students in collaboration with Agricultural Scientist Forum, and Chaudhary Sarwan Kumar Himachal Pradesh Agricultural University during 23–24 April 2018 at Palampur.

With the intention of keeping pace with climate change and finding a solution to the challenges being faced by the farming community, the prime objectives of the conference were as follows:

- Sensitizing the scientists, researchers, and students associated with the field of agriculture, towards doubling farmers' income with special reference to hill agriculture.
- To mitigate the challenges and formulate strategies for doubling farm income through high-tech agriculture, crop diversification, natural farming and sustainable animal husbandry for increasing livelihood security of the hill and mountain farmers.

The outcome of the conference will facilitate sharing of scientific and personal

experiences by different stakeholders, including teachers/scientists/researchers and students across different agricultural disciplines. The deliberations and recommendations have been documented in the form of proceedings and will be shared at different platforms for wider circulation with an objective of augmenting the sustainable farming systems of the country as a helping tool/document for doubling farmers' income by 2022. The conference aimed at providing a platform for the agricultural scientists, professional experts, resource persons and students dealing with different aspects of integrated farming systems. Undergraduate students participated in the general poster and declamation contest, which was part of the conference for sensitizing youth regarding problems being faced by the farming community.

The sub-themes of the conference were high-tech agriculture, crop diversification, natural farming and sustainable animal husbandry. Abstracts (research-based and general) were invited from professionals, academicians, researchers, students and experts associated with enhancing agricultural production systems for increasing livelihood security of mountain farmers.

In order to encourage young agricultural professionals, a young professional in the field of agriculture was honoured by the organizers for his outstanding initiative in agricultural entrepreneurship.

During the inaugural session, it was emphasized that in view of the sustenance of natural ecosystem, endowments like soil, land, water, etc. are to be harnessed in such a way that cherished goals of ecological sustainability, economic upliftment of farming community and vision of the Central Government in doubling farmers' income by 2022 are achieved. It is pertinent to mention that, Himachal Pradesh (HP) is predominately an agricultural state, where agriculture provides direct employment to about 71% of the total population and the agricultural sector contributes nearly 30% of the total state domestic product.

The participants of the conference were sensitized on the theme and sub-themes of the conference through lecture presentations. Deliberations were made by scientists of national and international repute, who shared their learned theoretical and practical experiences related to sub-themes of the conference. Further, keynote addresses were presented by eminent researchers, who discussed major constraints in increasing and doubling farmers' income in the Himalayas. They also highlighted the use of various technological and market interventions along with institutional support as well as strengthening of on-farm and off-farm training services for a manifold increase in farmers' income. Use of formal training and communication media was stressed upon as a time-honoured tool to enhance farmers' knowledge to undertake farming on a scientific basis and generate employment opportunities during the off-season. Thus, the orientation of farmers towards zero-budget natural farming can be helpful in reducing over-dependence on synthetic chemicals for conservation of the environment. Further, it is important to convince the farmers towards cashless transactions for

purchasing inputs and the sale of farm produce. Also, enhancing managerial and marketing skills of farmers in the production of high-value cash crops can be a milestone in their social and economic upliftment.

A theme lecture on high-tech agriculture highlighted the contribution of high-yielding crop varieties/hybrids. Besides, high-tech production systems need to play a significant role to combat climate change and ensure profitable agriculture. Technology generation is important, but major emphasis should be on its dissemination to end-users so as to provide a scope to increase income at the farm level. Yield gaps between farmers' fields and research farms are to be narrowed down to 5% from the prevailing 30–50%. High-tech agriculture is 'future farming' that would involve the biodiversity and biotechnology-driven seeds/planting material and other improved inputs, emphasis on micro-irrigation/fertigation, environment-friendly automation and mechanization, use of nanotechnology inputs, climate forecast, GPS, robots, pilotless tractors, drones and other machineries and tools common to agriculture, protected agriculture—indoor multistorey soilless urban farming, podponics, hydroponics, aeroponics, aquaponics, hi-tech greenhouse enhance farmers' income. Information and communication technology, sensors would contribute more to farming than present-day production practice/technology. There is an immediate requirement of establishing institutes of hi-tech agriculture/horticulture/protected cultivation in India. The greenhouse technology is still in its preliminary stage in the country, and concerted efforts are on from all concerned agencies and progressive farmers to bring it at par with global standards. Mass adoption of low-cost protected structures would lead to the desired large-scale production of vegetable crops at an affordable cost. Use of plastic mulch along with fertigation under the poly house as well as in open fields is a time-tested technology which has shown its potential to transform vegetable and flower production. New-age protected vegetable cultivation technologies such as soilless cultivation, hydroponics, aeroponics, aquaponics and rootstock breeding for graft seedlings to overcome abiotic and biotic stress need to be standardized locally and promoted in urban and pre-urban areas. High-tech agricul-

ture has the potential to increase production with maximized efficiency of input resources to yield manifold than open-field cultivation to contribute substantially in doubling farmers' income.

The participants were also given detailed exposure regarding natural farming with present status and future strategies. They were informed that the zero budget natural farming (ZBNF) model adopted by Andhra Pradesh was successful and could be used in HP. The farmers of HP are well aware of the benefits of organic farming and introduction of ZBNF system would be a boon for organic growers. Presently, organic farming clusters are spread throughout the state and these can be targeted for ZBNF. In order to include a foolproof implementation and financial arrangement, capacity building of functionaries at the Agriculture and Horticulture Departments, NGOs and scientists should be encouraged. The trained staff will demonstrate the technology in their area of jurisdiction. It is important to organize mass awareness programmes to motivate farmers to adopt ZBNF. Intensive training and continuous handholding support farmers of identified organic clusters should be ensured. Simultaneously, technology packages are being developed for field functionaries to be used in extension activities.

During deliberations on crop diversification, apart from adoption of high-tech agriculture, enhancement of rainwater use efficiency through rainwater harvesting and application through micro-irrigation, organized marketing to avoid distress sale, creation of storage facilities to avoid market glut, value-addition and processing, hilly areas agriculture (largely organic) by default/accreditation/certification were discussed in detail. Crop diversification in the form of fruits, vegetables, floriculture, medicinal and aromatic plants and introduction of non-farm enterprises, viz. apiculture, mushroom husbandry and value-addition could boost farmers' economy.

During deliberations on the role of animal husbandry in enhancing farmers' income, the discussion mainly focused on animal husbandry and sustainable agriculture. It was stressed that Indian agriculture had made impressive progress since independence, bringing self-sufficiency in food production and alleviating rural poverty. In spite of the increase in agricultural production, farmers' income did not increase much resulting in farming

distress and agrarian crisis. The growing disparity in per capita income between farm and non-farm sectors is multifactorial and requires immediate attention. Realizing the need to pay special attention to the plight of farmers, the Government of India proposes to double farmers' income by 2022–2023, thus reducing agrarian distress and bringing income parity with the non-farm sector. Livestock contributes significantly to food and nutritional security, and stability and sustainability of the household income. In HP, an agriculture-based economy, livestock farming is an integral activity but long-term trends over last two decades reflect a gradual decline in livestock population, notably due to decline in pastoral farming. The broader areas of livestock farming which need attention include increasing productivity and production levels, clean milk production for export, proper utilization of

feed and fodder resources for sustainable animal production, reducing production cost and remunerative marketing and value-added products. Focus should also be given to institutional spending on research in animal husbandry with emphasis on skill upgradation and dissemination of production technologies and management practices for immediate productivity enhancement along with breed improvement programmes. Different models for different agro-climatic zones of the state incorporating dairying, goat-rearing and backyard poultry farming can be considered for incorporation in the farming system.

Thus the conference addressed basic issues of the farming community with a possible outcome for finding solutions to the problems being faced in doubling farmers' income by 2022. In order to double farmers' income, emphasis should be given to high-tech agriculture,

crop diversification, natural farming and sustainable animal husbandry for increasing livelihood security of mountain farmers by 2022.

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## MEETING REPORT

### Impact of Young Investigators' Meetings on life sciences research in India\*

IndiaBioscience (IBS), a non-profit initiative, occupies a unique niche in the ecosystem of life sciences in India, serving as an excellent platform for exchange of ideas on different matters related to life sciences research and education<sup>1</sup>. The IBS community includes scientists, educators and students at varying stages of their careers. IBS not only disseminates the scientific achievements of our researchers, but also highlights their efforts at public outreach and involvement in science education. Resources at IBS include a booklet on career opportunities, a space for science communicators to share their experiences, and opportunities for networking amongst young investigators (YIs) and postdoctoral fellows (PDFs). By engaging with academia and government along with the large network of people including educators and industry professionals that IBS has engaged with over a decade, it has now reached a stage where it can be used

as an ideal forum for discussions on matters related to science policy.

Starting with the first edition in 2009, the Young Investigators' Meetings (YIMs) organized by IBS have brought together early-career principal investigators, postdoctoral researchers, and senior scientists for wide-ranging discussions on science and careers in biology, and have helped to create a large network of biologists across India. The YIMs serve as a forum for lively interaction on a diverse set of topics including scientific ideas, building collaborations, securing funding and developing mentorship skills. Participants are able to network with potential collaborators, senior faculty, government leaders and representatives of granting agencies. In this way, the YIMs have acted as a launching pad for young scientists as they plan their independent careers in the life sciences in India.

The tenth edition of YIM (YIM-2018) brought together about 110 participants from all the previous YIMs under one roof for the entire duration of the meeting. The purpose of this YIM was to look

in the mirror – to understand the impact of our ten-year long journey on the landscape of Indian life sciences. Did our efforts help recruit bright young minds to the country? How well are these YIs doing, and is there a sense of community, collaboration and togetherness fostered by the YIMs? Are the YIs being good mentors, and are they able to attract and enthuse the next generation of scientists? Looking beyond the YIM, what is the future? Ten years from now, where are we going to be?

Since these questions address the pulse of life sciences research in India, it was anticipated that they would spur a spectrum of responses, concerns and suggestions. In order to have a structured self-evaluation, four discussion sessions were held around the following themes:

- (1) Best practices for recruitment and mentoring of YIs.
- (2) Sharing of resources and collaborations.
- (3) Ph D and postdoctoral training.
- (4) Future of biological sciences research in India.

\*A report on discussion sessions during the Young Investigators' Meeting that was held in Thiruvananthapuram from 5 to 8 March 2018.