

GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

RAJYA SABHA

UNSTARRED QUESTION No. 4131
(TO BE ANSWERED ON 07.04.2022)

PROMOTION OF SCIENTIFIC TEMPER BY CSIR

4131. SHRI HARNATH SINGH YADAV:
LT. GEN. (DR.) D.P. VATS (RETD.):

Will the Minister of **SCIENCE AND TECHNOLOGY** be pleased to state:

- (a) whether Council of Scientific and Industrial Research (CSIR) plays a pivotal role in providing necessary base of knowledge for social and economic development of the country including that of rural areas and small cities;
- (b) if so, the achievements and performance thereof during the last two years;
- (c) whether CSIR has taken several new measures to imbibe scientific acumen among the youths; and
- (d) if so, the details thereof?

ANSWER

**MINISTER OF STATE (INDEPENDENT CHARGE) OF
SCIENCE AND TECHNOLOGY AND EARTH SCIENCES**
(DR. JITENDRA SINGH)

- (a) Yes, Sir. CSIR is utilizing the knowledgebase and technologies available in different institutes of CSIR for addressing the rural challenges through various projects, which enables deployment of relevant CSIR technologies/ innovations/ products/ processes/ interventions/ services in villages across the country for augmenting the incomes and improving the quality of lives of the targeted communities.
- (b) CSIR is working to promote Scientific & Technological interventions for the development and support to the society. Some of the initiatives taken by CSIR for the benefit of people especially from rural areas are as follows:
 - I. CSIR Aroma Mission: Catalysing Rural Empowerment through Cultivation, Processing, Value Addition and Marketing of Aromatic Plants:** CSIR initiated a Mission Mode Project “CSIR-Aroma Mission in 2017 and till date more than 20,000 hectare additional area has been brought under cultivation of economically important aromatic crops. During this period 30 new superior varieties of various aromatic crops have been developed, 45 agrotechnologies developed and are being deployed. Total 300 distillation units (primary processing) have been installed in various clusters developed under Aroma Mission across the country enabling the distillation of about 600 tons quality essential oils worth about Rs. 75-80 crores which helped to reduce the import of these oils. This has helped aroma industry in India especially during the long pandemic time duration. More than 1100 Training/Awareness programs were conducted benefiting around 63,300 human resource. Besides 34 value added products have been developed to encourage the new entrepreneurs and startups. Socio-Economic Impact Assessment (SEIA) of activities carried out under CSIR Aroma Mission resulted in following major outcomes: enhanced and assured income of the beneficiary farmers specially utilizing

unproductive areas, ~300 Women Self Help employees created, 41-60% of the product exported, 21-40% increase in percentage of growth revenue and educated youth are returning back to farming in their native land from urban areas. These youths are entering into new business opportunities through training of the technology intervention given under CSIR-Aroma Mission.

- II. CSIR-Floriculture Mission:** CSIR initiated a ‘Floriculture Mission’ in 2020-21 which is expected to utilize the knowledgebase available in CSIR institutes and leverage it in an effort to help Indian Floriculture farmers and industry reposition itself to meet the import requirements in the domain by developing and deploying varieties of crops like Gladiolus, Canna, Carnation, Bougainvillea, Chrysanthemum, Gerbera, Lilium, Marigold, Rose, Tuberose, Strelitzia, Alstroemeria and Hippeastrum. Through implementation of “CSIR Floriculture Mission” an area of about 4,350.54 hectare is expected to be brought under floriculture crops with integration of floriculture with apiculture is expected to benefit > 3500 farmers and generation of >15.00 lakhs man days in 3 years of implementation. Enhanced income of farmer up to Rs. 18 Lakh per annum per hectare of land is expected.

III. Development of agriculture and increasing the income of farmers and poor people in tribal-dominated Nabrangpur District of Odisha:

Nabrangpur is an aspirational and one of the poorest districts in the country having 56% tribal population with lowest per capita income in Odisha. 12 Government Departments (Central & State) and 15 entrepreneurs working with 5,000 farmers, artisans and women self-help groups.

- **Participating Research Institutes:** CSIR – Institute of Minerals & Materials Technology, Bhubaneswar; CSIR – National Botanical Research Institute, Lucknow; CSIR – Central Institute of Medicinal & Aromatic Plants, Lucknow; CSIR – Central Food Technology Research Institute, Mysore; CSIR – Indian Institute of Petroleum, Dehradun; ICAR – Central Institute of Freshwater Aquaculture, Bhubaneswar; ICAR – Indian Institute of Horticulture Research, Bengaluru; ICAR – Central Tuber Crop Research Institute, Thiruvananthapuram; ICAR – Central Avian Research Institute, Bhubaneswar; ICAR – Indian Institute of Water Management, Bhubaneswar; ICMR – Regional Medical Research Centre, Bhubaneswar; DBT – Institute of Life Science, Bhubaneswar.
- **Areas of S&T Interventions:**

Farm based Intervention: Value added agriculture of Aromatic, Horticulture and Tuber crops, Improved varieties, Capacity building, training and demonstration (Agrotechnologies, Integrated farming, Water harvesting & management.

Value addition of farm products: Development of entrepreneurial activities and training the trainers in basic food processing techniques, Common facility creating for primary/secondary processing of food, aromatic and horticultural products, Fishery and poultry development.

Health and habitat: Understanding health and nutrition issues, Utilization of waste biomass for energy recovery, Conservation of biomass through efficient devices for cooking, drying etc., Water and sanitation, Solar/wind energy for farm use.

- IV. Improved Samba Mahsuri variety for Bacterial blight resistance with low glycemic index Rice:** Improved Samba Mahsuri being similar to Samba Mahsuri (BPT5204) in quality and yield traits and having additional features like resistance to bacterial blight disease, low glycemic index value, 7-10 days early maturation than existing variety has a potential to replace existing Samba Mahsuri which is cultivated in about 2-4 million hectares in India. Currently this variety is being cultivated in an area of about 900,000 hectare. The total value of ISM produce is estimated to be Rs. ~8650 crores out of which the trait value (Benefit of growing ISM instead

of SM) is Rs. ~1650 crores.

V. Seaweed farming for enhancing the income of coastal farmers: ~1000 (Mostly Women) trained in sea weed farming during last 2 years in association with National Fisheries Development Board, Hyderabad to get the assured income up to Rs 15, 000/ month. M/s. Aquagri private limited is the private partner offered the buyback of the biomass produced by the beneficiaries from cultivation. The program has been developed with M/s. Pidilite industries where capacity building and hands on training will be imparted to the fishermen of coastal Gujarat for the next three years. This will also be linked to the CSR activities of the industry.

VI. Unnat Bharat Abhiyan (UBA): Unnat Bharat Abhiyan is the flagship National Program of the Government of India. The major objective of UBA has been to bring in transformational change in rural development processes by leveraging knowledge available with institutions spread across the country. CSIR has been at the forefront of developing and deploying various technologies for agriculture sector and rural development for creating livelihood opportunities in rural areas. CSIR entered in to a tripartite Memorandum of Understanding (MoU) with Unnat Bharat Abhiyan (coordinated by IIT, New Delhi) and Vijnana Bharati (VIBHA) to provide an enabling platform for CSIR to work jointly for creating livelihood opportunities in rural areas especially in the wake of situation created by COVID-19 epidemic.

(c) Yes, Sir.

(d)

I. The Council of Scientific and Industrial Research (CSIR) has been providing doctoral and Postdoctoral fellowships with the objective:

- To nurture the budding scientific talent and to nourish the objective of doing scientific research by pursuing PhD programmes;
- To identify promising young researchers with innovative ideas and provide them with training and research opportunities in niche areas of basic science, engineering, medicine and agriculture;
- To promote postdoctoral research in the country; and
- The scheme aims at facilitating their transition from mentored to independent research career.

For the socio-economic development of the disadvantage persons, CSIR has provision of reservation in its largest fellowship programme i.e. Junior Research Fellowship awarded through CSIR-UGC National Eligibility Test (NET) for candidates belonging to EWS/OBC/SC/ST/PwD as per GoI instructions issued from time to time. Under its "Capacity Building and S&T Human Resource Development: Doctoral and Postdoctoral Fellowship Programme", CSIR provides age relaxation of 5 years to women candidates in upper age limit for award of Fellowships/Associateships to pursue doctoral and postdoctoral research with the aim to encourage women candidates to opt science and technology as a career. As a result of the steps taken by CSIR to encourage women in the field of Science and Technology, the women participation has witnessed an upward trend in their overall strength in the doctoral and postdoctoral fellowships awarded by CSIR. During 2021-22, out of total doctoral and postdoctoral fellows supported by CSIR, the women representation was 45%. Annually CSIR offers a large number of fellowships to young students who are going to be future scientists. At

any given time, CSIR supports about 9500-10000 young researchers in their pursuit for doctoral and postdoctoral research in the field of science and technology.

Additionally, Council of Scientific & Industrial Research (CSIR) and Kendriya Vidyalaya Sangathan (KVS) had signed an MoU on Scientist – Student Connect programme ‘Jigyasa’ on 6th July, 2017. The CSIR’s Jigyasa program is a unique platform for bringing scientists and teachers for nurturing young minds. This program envisages opening up the national scientific facilities to school children, enabling CSIR scientific knowledgebase and facility to be utilized by school children. This model of engaging school children also has been extended to other schools in addition to KVS. The Jigyasa programme envisages some of the following models of engagement:

- Laboratory Visit;
- Popular Lecture Series;
- Summer Vacation Programmes;
- Scientists as Teachers and Teachers as Scientists;
- Teachers’ Workshop;
- Student Residential Programme;
- Visits of Scientists to Schools; and
- Lab specific activities / Onsite experiments and many more.

The Jigyasa program is being implemented through CSIR laboratories wherein ~3,00,000 students across the country have benefitted, directly since 2017. More recently, CSIR has signed MoU with NVS (Navodaya Vidyalaya Samiti) and Atal Innovation Mission of NITI Aayog to further accelerate the Student-Scientist outreach program of CSIR. Recently “Jigyasa Vigyan Mahotsav 2022”- a National Level Scientific creativity competition to create contents (comic, science fiction, infographics, videos, App development, animation and others) in the domain of energy, health, artificial intelligence, climate change, water conservation, disaster mitigation and agro technology were organized during January to February 2022. The Jigyasa Vigyan Mahotsav 2022 programme had organised 15 bootcamps with more than 30,000 participants. Taking forward CSIR’s Jigyasa program to millions of school students, the Jigyasa-Virtual Lab concept has been formalized and developed.

- II. **India International Science Festival (IISF) 2020:** World’s largest Virtual Science events (41 events) including Science for Agriculture & Rural Development, Industry & MSME, Science for students & Masses wherein 400+ sessions were organized with 2000+speakers, 307 model presentation, 4073 gallery showcase and 483 poster presentation. Special emphasis was on youth was focussed and special sessions like Northeast Student Conclave, Science Education in India and Students Engineering Competition were organized and these events witnessed total 1.33 lakh visitors.
- III. **Science Awareness Magazines & Activities:** The popular science magazines Science Reporter, Vigyan Pragati and Science ki Duniya played pivotal role among youth and students during COVID Pandemic as the magazines brought out special coverage on various aspects of the SARS-CoV-2 virus, pandemics and epidemics, viral genome sequencing, testing for COVID-19, digital transformation in healthcare, role of wildlife trade in increasing zoonotic diseases, efforts being made towards mitigation of COVID-19 and public awareness features. Weekly e-Bulletin on COVID-19 from March, 2020 to September, 2020 was brought out. Other activities taken focusing the youths are as below:
 - Special issue of Rajbhasha magazine (Navsanchetna) on COVID-19: focused on various aspects of COVID-19 for creating public awareness.

- COVID-19 Awareness Competitions for School Children: Drawing/Painting, Essay writing and Video making Competitions on COVID-19 for students of Class 5-12 with 8000 entries from 6200 schools in 1200 cities and villages across the country.
- World Book Fair 2020: Science Cartoon Workshop & Competition was attended by more than 100 students from different schools and Panel Discussion on “Communicating Science to Children” in collaboration with the National Book Trust (NBT), New Delhi
- Vigyanika: International Science Literature Festival 2019, as part of the fifth India International Science Festival mega-event and was attended by many students. As part of Vigyanika, various events were organised such as Keynote Lectures, Panel Discussions, Scientific Sessions, Round Table Meet, and Vigyan Kavita apart from Science Cartoon Workshop & Competition.
