

## **Minutes**

### **'Meeting of Prof. Rattan Lal with Prime Minister and the Discussion on Scaling CSA'**

**Webinar on 30 June 2023**

On the initiative of Dr Raj Paroda, Chairman, TAAS, a webinar was organized on 30 June 2023 to get an update from Prof. Rattan Lal on his interaction with the Hon'ble Prime Minister, Shri Narendra Modi during his recent visit to USA. The meeting was moderated by Dr Paroda and attended by 33 eminent experts from USA and India (List attached). Dr Paroda stated that the purpose of organizing this webinar was twofold: i) to obtain feedback from Prof. Rattan Lal, of his meeting with the Hon'ble PM Shri Narendra Modi ji in New York on 21 June 2023, and ii) to have discussion on scaling climate smart agriculture.

During his address to the US Congress, PM had explicitly expressed his concern on climate change and proudly stated that India is ahead of other countries in meeting the commitment to Paris Agreement. In this regard, Dr Paroda stated that while progress on reducing emission intensity and generating clean energy through non-fossil fuel sources, there is an impressive progress on track, while the commitment on building carbon sink of 3 billion CO<sub>2</sub> equivalent, there is obvious constraint of increasing forest cover from present 25 per cent to expected to 33 per cent. Hence, the role of agriculture sector to build carbon sink capacity on one side and reducing GHG emissions on the other becomes important through scaling of innovations related to carbon smart agriculture. He then requested Prof. Lal to take the floor.

Prof. Rattan Lal was appreciative of the meeting with Hon'ble PM. He also presented to him a recent book entitled "Soil - Human Health Nexus", He specifically talked about soil health, carbon farming, nutritional deficiency in children, and caution against zero-budget farming to feed increasing Indian population. The Hon'ble PM was quite receptive to different ideas/suggestions put forth by him and other experts. He was particularly interested to seek help in improving soil health. He also desired that the soil health card scheme be made more effective and efficient. Besides soil health, carbon farming, nutritional deficiency in children, he mentioned that zero-budget farming is not likely to help in meeting our food demand.

In addition, Prof. Rattan Lal shared his views with the participants of the webinar on sustainable agriculture, climate change issues, exchange and collaboration of Indian universities with US universities. He emphatically expressed that agriculture must be given greater thrust for food security and addressing climate change. He mentioned that excessive heat or shortage of water can impede crop growth, reduce yields, and influence irrigation, soil quality, and the ecosystem on which agriculture depends. He stated that Food-Energy-Water (FEW) should go together wherein he added soil (S) making it 'FEWS'. Agriculture sector in India is highly vulnerable to climate change. Higher temperatures tend to reduce crop yields and favour weed and pest proliferation. Climate change can have negative effects on irrigated crop yields across agro-ecological regions both due to temperature rise and changes in water availability. He noted that the solution lies in climate resilient agriculture (CRA), and not Climate Smart Agriculture (CSA), an imprecise term popularized by FAO. Climate resilience is a fundamental concept of climate risk management. Resilience refers to the ability

of an agricultural system to anticipate and prepare for, as well as adapt to, absorb and recover from the impacts of changes in climate and extreme weather. CSA has three pillars: increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing or removing greenhouse gas (GHG) emissions, wherever possible. Earlier in 2019, India had 6.2 crore more people living with food insecurity, which increased by 3.8 per cent between 2014 and 2019. In 2020, India is the home to nearly 200 million undernourished people. He was concerned about resilient solutions. He was not much in favour of zero-budget farming, whereas Government of India pushed for zero budget farming with the target to restore 26 mha degraded land by 2030. In the end, he remarked that we have a great opportunity to bring about transformation in India so that agriculture is a part of the solution to climate change, water quality and renewability and strengthening biodiversity while achieving food and nutritional security. Our Slogan is “Science-Based Agriculture as a Solution to Global Issues”. He was concerned about India’s approach to “Reducing Emission Intensity” which needs to be discussed critically and objectively. If a nation’s GDP grows by 7 per cent and its emission by 2 per cent, it does not need a rocket scientist to figure out that emission intensity will decrease automatically.

Dr Paroda appreciated the intervention of Prof. Rattan Lal and thanked him for his recent offer to help TAAS and NAAS on activities related to NRM, especially on soil health improvement.

With regard to second objective of the webinar, the opportunity was availed to gain views of experts on how to scale CSA to sustain the growth of Indian agriculture and accelerate the pace to meet the national commitment towards carbon sequestration under the Paris Agreement by 2030. Excellent statements were made by Drs Himanshu Pathak, ML Jat, Suri Sehgal, Jit Srivastava, Uma Lele and Shri Chandrashekhar Bhadsavle on diverse topics. This was followed by an open discussion in which Drs Ram Kaundinya, Prabhu Pingali, T Mohapatra, HS Gupta, Gajendra Singh, HS Sidhu, and Mahesh Gathala shared their views. Topics discussed were climate smart agriculture (CSA), organic farming, natural farming, conservation agriculture (CA), landscape approach, strategies for irrigated/non-irrigated areas, increased forest cover, crop diversification, water, energy, food etc.

**Dr Himanshu Pathak** admired Hon’ble Prime Minister, whom he had met twice recently. He mentioned that Hon’ble PM is concerned about soil health and climate change issues. He also emphasized on *Panchamrit*, zero emission, renewable energy, crop diversification, organic vs natural farming, upscaling of conservation agriculture (CA) up to 25 per cent, 26 mha degraded land to be improved by 2030, legume-based farming, and bioformulations. He mentioned that plants form the backbone of natural ecosystems, and they absorb about 30 per cent of all the carbon dioxide emitted by humans each year, but as the impacts of climate change worsen, higher levels of CO<sub>2</sub> in the atmosphere and warmer temperatures will affect plants adversely. He is concerned as to how we reduce emissions in the atmosphere which contribute to climate change? He is convinced that we need an urgent action to reduce GHG emissions.

**Dr ML Jat** suggested landscape approach to integrate policy and practice for multiple land uses, within a given area, to ensure equitable and sustainable use of land while strengthening measures to mitigate and adapt to climate change. He also suggested to increase green cover, increase input use, strategy for irrigated and non-irrigated

situations, about fodder quality with better digestibility which help in less methane production, cluster approach, re-visit NICRA, incentives for ecosystem, water-budget based agriculture, carbon market, quality of carbon, valuation of ecosystem services, and integrated approach.

**Dr Suri Sehgal** talked about Sehgal Foundation which he established 22 years ago. The Foundation's work is spread all over India. He acknowledged that the Foundation has not concentrated on climate smart agriculture. The Foundation is working at the grassroot level since 1999 to improve quality of life of the rural communities in India with the help of dedicated team that creates sustainable programs to address rural India's most pressing needs, viz. water management, agriculture development, local participation and sustainability, and outreach for development. He was particularly concerned about the water (including ground water) overexploitation problem. He noted that Indian soils are low in organic matter content. Among others, he discussed soil health, carbon sequestration, CSA, long-term sustainability, policy intervention for rainfed and irrigated agriculture, empowerment of villagers, rejuvenation/ charging of aquifers, importance of water storage, etc. If there is no water, there will be no dryland agriculture. He offered to use his platform for any kind of experimentation for upliftment of farmers. Dr Paroda expressed his appreciation for commendable contributions of Sehgal Foundation. He announced that TAAS is conferring Dr MS Swaminathan Award for Leadership in Agriculture for 2022 to Dr. Suri Sehgal for his outstanding contributions.

**Dr Jit Srivastava** mentioned good work undertaken by the Hon'ble Union Minister of Road Transport & Highways, Mr Nitin Gadkari in developing Highways/Expressways in a big way across the country and emphasized the importance of greening of National Highways/Expressways with tree plantation. He also mentioned about the tree plantation efforts made by Mrs and Dr Paroda along the road of 3 km leading to a temple in the mountain through *Panchayat* grazing land. Planting of trees along the state roads and the national highways could certainly be one of the interventions worth taking-up by interested stakeholders and village individuals/*Panchayats*. Dr Srivastava suggested constituting a small group to bring agriculture and agroforestry together using TAAS, NAAS and ICAR institutes.

**Dr Uma Lele** underlined Dr Srivastava's statement and said that tree plantation is extremely important. She also stressed to take-up special initiatives on issues related to soil, water and forestry. Hence, it will be desirable if interested people join hands to start work in priority areas and monitor the progress.

**Shri Chandrashekhar Bhadsavle** stated that Saguna Rice Technique (SRT) is very simple. Under this technique, tillage is completely avoided, and the crop residue is disintegrated into soil by using weedicides and microbial cultures. He stated that the technology is accepted by FAO, and also by Government of Maharashtra which gives happiness to Maharashtra farmers. He appreciated the efforts made by Drs Raj and Shashi Paroda to grow canopy trees with full protection in the deserted landscapes. This clearly shows, tree planting is one thing and post planting protection becomes most essential. People plant millions of trees every year but survival rates are very negligible.

**Dr Ram Kaundinya** expressed important points such as: i) farmers must make money, ii) government policies should incentivise subsidy for achieving climate resilience, iii) we must use multiple technologies, iv) there should be support of both

Centre and State, and v) involvement of private sector is important for faster adoption of technologies.

**Dr Prabhu Pingali** emphasised the importance of food security and climate change. Under a business-as-usual scenario, the current push for doubling productivity will further aggravate these environmental and climate trade-offs, but a ‘zero-hunger, zero-carbon” (ZH2C) food system could explicitly minimise the trade-offs between hunger reduction and GHG emissions by adopting effective climate mitigation strategies. He noted that there should be no tradeoff between food and climate resilient agriculture (CRA). Agriculture is responsible for nearly 20 per cent of India’s emissions, with livestock and rice cultivation as biggest contributors. He stressed the importance of policy reforms to achieve these objectives.

**Dr HS Gupta** informed about the establishment of National Research Foundation (NRF) with an allocation of ₹50,000 crore for strengthening research. Hope the funds with this apex body will be utilized for R&D programs in agriculture. With the help of NRF, irrigated area through micro irrigation could be expanded.

**Dr HS Sidhu** said that carbon sequestration (CS) has been increasingly viewed as one of the crucial issues/strategies to address the challenge of global warming-led climate change effects besides imparting sustainability to productivity. In agricultural land use systems, increased CO<sub>2</sub> emission into the atmosphere is through repeated and frequent cultivation of croplands, crop residues, biomass burning, shifting cultivation, cultivation of low biomass producing crop cultivars, land degradation, deforestation, etc.

**Dr JK Ladha** stressed the importance of sustainable management of agriculture and natural resources for increasing food and environmental security.

**Dr Gajendra Singh** emphasized the importance of practicing conservation agriculture (CA) in a big way. Vertical farming is another emerging option in the urban areas. He also suggested that to begin with, at least all ICAR institutes should use CA on their research farms.

**Dr T Mohapatra** stressed the importance of pulses production and productivity gain of 6mt achieved through a mission approach. Question arises as to how long will India import pulses and edible oil? The country is importing edible oil to the tune of about Rs 1.5 lakh crore. We have to look critically at fundamental problems. Among others, he suggested the need to improve irrigation system, and to curb the wastage of water.

**Dr Mahesh Gathala** focused on CA-based sustainable intensification, soil fertility and environmental stresses.

Due to paucity of time, other participants (Drs AK Singh, Ramesh Kanwar, KV Raman, Mohan Saxena and few others) could not speak but were requested to send their comments in writing.

In view of overwhelming response and considering the importance of issues discussed, it was suggested by many that to act on ground, taking the benefit of expertise and interest of different influential stakeholders, a few selected areas be identified to form groups to deliberate more in detail and come out with strategy and way forward to work and make an impact towards climate resilient agriculture (CRA). Some important areas identified for urgent action were:

- Soil health and regenerative agriculture is an area which PM has been emphasising - as also mentioned to both Prof. Rattan Lal and Dr Himanshu Pathak. Hence, a group under the leadership of Prof. Rattan Lal, with Dr M.L. Jat as convener and others interested as members would be a step forward.
- Expanding tree cover both on farm and along roads and degraded lands, bunds, etc. under the leadership of Dr Jit Srivastava, with Dr Chandrasekhar Birader as convener and others interested as members would make a step forward.
- Policy reform is another area, to address issues like incentives rather than subsidies, compensation for environmental services, etc. convincing case to be taken-up. Dr Uma Lele along with Dr Prabhu Pingali may lead with others interested as members to put forth an appropriate policy reform agenda.

Dr Paroda suggested that those interested in these three areas may kindly volunteer to join the group and indicate their willingness preferably by 20 July. These groups could deliberate among themselves and develop a working plan of action, preferably with a monitoring framework. Dr Uma Lele could assist as facilitator along with Dr Raj Paroda to proceed further with required secretariat assistance by TAAS.

The webinar ended with vote of thanks by Dr Bhag Mal to the Chair and all participants.