

Scientists undertake Science Walk – K2023

Scientists of CAZRI at Jodhpur participated in “Science Walk” on 10th August which got kicked off at 9.30 am at the Integrated Farming Cafeteria (IFC) and initial briefing was made by Dr. P.C. Moharana, Incharge-PME. Scientists and the Heads of Divisions participated in the event. Director of the institute, Dr O.P. Yadav interacted and shared his views in the scientific discussion during the visit.



Scientists had a good look at the newly established Integrated Farming Cafeteria, developed in a 2 ha area partitioned into six blocks (silvi-pasture, crop cafeteria, fodder, green manuring/vegetable, horticulture and farm rainwater harvesting) and six compost pits. The cafeteria deems to exhibit a single window of CAZRI technology on land management, water management and agricultural innovations to all stakeholders. Drs. R.N. Kumawat, H.R. Mahla, Archana Verma, P.R. Meghwal, Sharwan Kumar and P. Santra explained the models. The cafeteria exhibits varieties of kharif crops with observed variability in all the crops. Millets are grown for the first time in cafeteria in view of International millet year.

Scientists also visited a newly developed farm pond (20 m x 12 m wide at top, 16 m x 8 m at bottom and depth of 3 m), with a total capacity to store 5 lakh litre water. The stored water is to be utilized to irrigate horticulture (gonda, fig, pomegranate, ber and datepalm) crops planted in the cafeteria.

Dr. RA Sharma and Dr. HR Mahla explained the breeding strategies of moth and guar improvement respectively. They explained the methods adopted to create variability and the evaluation/ selection criteria to identify the desirable plant types.



Dr. RK Kakani explained the breeding program and strategy to develop single cross hybrids and also inbred restorers in bajra. In eddy-covariance tower in pearl millet block, there was discussion on CO₂ flux measurement specially the fetch area of measurement.



Spectroradiometer measurement in the crop field was demonstrated. The plot area of 20 m x 20 m and the footprint of satellite image for monitoring crop water stress was a very good point of discussion. Scientists interacted on possible futuristic measurement on CO₂ flux measurement system on new agroforestry block in terms of measuring ecosystem services. There was discussion on need of quantifying and proving high carbon assimilation of pearl millet as it is well established since it is a C₄ plant. However it has been counter argued by stating the need of quantifying carbon and water footprint of pearl millet crop as compared to other cereal and thus urging the need of fetching premium price of pearl millet especially in the context of climate change scenarios.

Dr. Archana Verma briefed about the main rationale, objectives and about the ongoing work. The scientists were informed that two species *Melia dubia* and *Gmelina arborea* planted in year 2021 are well established with growth increment of 2-4 cm in diameter and 3-4 m in height in one year. The species were planted in three spacing; 6x6 m, 6x6 m and 6x12 m. The two crops Mung bean and Pearl millet are intercropped with these trees to evaluate the growth performance and yield of different tree-crop combinations in varying spatial geometries. She also informed about drip irrigation schedule for the species that will be developed.

Dr. Archana Verma highlighted the experiments of use of *Melia dubia*, *Gmelina*, *Ailanthus*, *Shisham* and *Moringa*-based agro-forestry models in increase income and resilience in arid farming. Two crops mung bean and pearl millet are intercropped with these trees to evaluate the growth performance and yield of different tree-crop combinations in varying spatial geometries. Dr Archana Sanyal explained influence of row spacing on seed yield, it's contributing traits and seed quality in Buffel grass.



Dr. RK Kakani provided the details of seed production program undertaken at CAZRI during this kharif season. Mung bean field of GAM-5 was at its best and all the scientists appreciated the efforts being undertaken to maintain such large fields.

All the scientists wanted to know how such big fields evaluating thousands of lines of moth bean, guar and bajra are being maintained so precisely. They appreciated the genetic diversity clearly visible in the field.

Dr. Rajwant K Kalia explained the objective of the trial along with the details of provenances selected from western Rajasthan, the progenies evaluated in nursery and field trial. She also explained about the future strategy to convert this trial into seed orchard for regular collection of seed material. This seed will improve the quality of planting material to be supplied by CAZRI in future.



Dr. SPS Tanwar took the scientists round the IFS block and a model developed for 4 ha area exhibiting a combination of annual crops, multi-purpose trees etc in systems of agroforestry, agro-horti, silvi pasture, horti-pasture and also ornamentals / plants of medicinal value. He advocated how the model can be helpful to provide round the year income to the farmers of the region.

