M V K Sivakumar –

A Pioneer in Management of Weather and Climate Risks in Agriculture

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Dr. M V K Sivakumar…..

- Dr. M V K Sivakumar , after completing his Ph.D under Dr.R.H.Shaw an Extension Climatologist at IOWA State University, shifted his focus from Agronomy to Agroclimatology.
- He carried out his research work on ‘ Soil-plant-water relations, growth and nutrient uptake patterns of field grown soybeans under water stress’ at the Western Iowa.
- He Joined ICRISAT in 1977 as Agroclimatologist and worked extensively on the Agroclimatic issues of Rainfed Agriculture in India and West Africa.
- He carried out rainfall climatology studies employing Markov chain probabilities and incomplete gamma distribution, for several locations in semi-arid India and West Africa.

M V K Sivakumar ....

- During the early part of his career, His major research emphasis was on :

- Identifying the physical and biological processes that largely determine crop performance and on establishing the basic principles that describe these processes.

- His main focus was on studying the semi-arid crops like Sorghum and Groundnut and their response to variations in water, radiation and temperature and to water stress.

- Dr Sivakumar also collected large number of datasets in a soil-plant-atmosphere framework for use in the development and testing of dynamic, process-based crop production models in collaboration with other colleagues.

Dr.M V K Sivakumar .....

- In 1981, Dr Sivakumar was promoted to the international cadre as the **Principal Agroclimatologist** and was made responsible for the Agroclimatology subprogram of the **Farming Systems Research Program** in ICRISAT.
- He continued his agroclimatological research using a holistic approach - '**evaluating the macroclimate of a region and the microclimate of crops**'.
- He used the knowledge emanating from such an approach for improving the performance of crop production systems, involving dryland crops such as sorghum, pearl millet, groundnut, pigeonpea and chickpea.

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- In these studies the productivity of maize, sorghum, pigeonpea and the maize/pigeonpea intercrops in the operational research watersheds was measured **in relation to the interception of PAR.**
- Through these studies he could show that different shading ability of the crop canopies was one of the factors which determined the **crop/weed competition balance** and thus contributed to differential crop productivity observed in different cropping systems.

M V K Sivakumar ….

- In 1984, Dr Sivakumar moved as the Principal Agroclimatologist, to the ICRISAT Sahelian Center (ISC) in Niamey, Niger. During his long stay here, He established a highly successful Agroclimatology research program at ISC and also analysed data on the **spatial variability of rainfall and soils of West Africa** with principal focus on improving the productivity of semi-arid crop production systems in the Sahelian region of West Africa involving pearl millet, cowpea and groundnut.

- He also worked very closely with the National Meteorological Services **of Niger, Mali, Burkina Faso, Senegal, Nigeria and Chad** in the analysis of climatic data from their countries and in publishing books on agroclimatology of these countries.

M V K Sivakumar ....

- Based on the experiences at ISC, Dr . Sivakumar developed a new strategy called "**Weather-Responsive Crop Management Tactics**" based on the relationship between the onset of rains and the length of the growing season that enables **growing two crops in a year in the rainfed regions of the Sahel where only one crop was grown before**.
- Dr Sivakumar also established successful collaboration with the Institute of Hydrology (U.K) in conducting energy and water balance investigations of the Sahelian cropping systems. He also established collaboration with the International Geosphere Biosphere Program (**IGBP**) in conducting climate change research in West Africa and organized the first International Workshop on Climate Change in Africa in association with IGBP.

M V K Sivakumar ....

- Also as a Visiting Professor at the Kansas State University, (1987-88), on sabbatical leave, Dr. Sivakumar conducted research on **Drought Spells and Drought Frequencies in West Africa** and brought out a book published by ICRISAT.

- Interestingly, during the later part of 1987, I had a chance to Visit Iowa State University for 5 months, to work with Dr. Elwyn Taylor, then Extension Climatologist and had a chance to look at the interesting research work carried out there earlier by **Dr. Sivakumar and also Dr. Robert Stefanski at Iowa**.

M V K Sivakumar ....

- In 1992, Dr Sivakumar was promoted as the **Leader**, **Resource Management Program** at the ICRISAT Sahelian Center in Niamey, Niger and
- In 1993, he was appointed as the **Director of the Soils and Agroclimatology Division of ICRISAT**. In this capacity, he developed the "Desert Margins Initiative", one of the major eco-regional initiatives of the Consultative Group on International Agricultural Research (CGIAR).

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- Dr Sivakumar then moved to the World Meteorological Organization (WMO) in 1996 and became the Chief of the Agricultural Meteorological Division in the World Climate Programme of WMO.
- **In this capacity, he organized a number of international workshops and capacity-building activities to promote agrometeorological research and applications, around the world.**
- In 2008, Dr Sivakumar was appointed as the Director of the Climate Prediction and Adaptation Branch (CLPA) of WMO and provided leadership to four important divisions in CLPA, including the Agricultural Meteorology Division.

M V K Sivakumar ....

- He further served as the focal point of WMO for the United Nations Framework Convention on Climate Change (**UNFCCC**) till 2012. He also maintained close liaison with many international organizations, besides working for sometime as the Acting Secretary of the Intergovernmental Panel on Climate Change (**IPCC**), during his stint at the World Meteorological Organization, as the Chief of the Agricultural Meteorology Department.

M V K Sivakumar ....

- Sivakumar all along focused his research activities on '**Ways for effectively meeting the weather and Climate risks in Agriculture**' as he believed that this is the key for Sustainable Agricultural production across any Ecosystem.
- He along with Raymond P Motha, later organized an International Workshop on **' Agrometeorological Risk Management: Challenges and Opportunities** , at New Delhi during 25 to 27 October, **2006,** Wherein many of us have participated and shared our experiences on **Weather and Climate risks in Agriculture and strategies to manage them** .

M V K Sivakumar ....

- International Symposium on " **Agrometeorology and Food Security** " Feb 18-21, **2008** at CRIDA

- **In 2008, we at ICAR-CRIDA, Hyderabad Conducted an International Symposium on ' Agrometeorology and Food Security ' during 18-21st February, for which Dr.Shivakumar provided good support and had personally participated and took part in the successful conduct of this symposium on this important topic.**

- In this Symposium, Sivakumar (2008) had emphasized that ' **the diversity of climate, soil and moisture regimes makes Agro-climatological research challenging-** but it also provides opportunity to agrometeorologists to make a substantial contribution in the identification of the solutions - **wherein ten such areas of contribution were advocated ' For managing Weather and Climate Risks in Agriculture** '.

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- He also emphasized on the need for **Improving Agrometeorological Bulletins: Brainstorming on Issues and Prioritization – on how to make the Agromet Advisories more easily reachable and adoptable by the farmers, timely.**

- Able support for the success of this Symposium was also provided by Dr. Samsul Huda, Robert Spooner Hart and ACIAR group led by Dr. Kep Coughlan, Peanut Modeller- K J Boote etc.

M V K Sivakumar ....

Sivakumar always believed and advocated that :

- Crop productivity is particularly sensitive to climate variables**, incident solar radiation being a key factor** in growth and yield (Mannava, 2023). He always advocated that Solar radiation is a critical component of the energy balance that drives evapotranspiration processes, affecting water and nutrient transport in plants and, consequently, crop yield
- He carried out a lot of work on Solar Radiation during his career. Taking note of all the above work on Solar Radiation, he in his later years, philosophically emphasized the need for improved respect to Sun (As **God- Bhagawan**), by Agrometeorologists.

He thus made a Lifetime of Significant contributions in the field of Agroclimatology.

And

Dr. Mannava Sivakumar continues to remain in our memories as Bright as the Sun