Breaking the Cycle: Understanding Insect Vector-Plant Pathogen Interactions for Smarter Management

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Abstract: Insect-transmitted plant viruses pose a major threat to agricultural productivity and global food security. My research program at Texas A&M AgriLife Research aims to deepen our understanding of insect transmission, pathogenesis, and host-pathogen interactions using multi-omics approaches. By integrating fundamental and applied research, we strive to develop innovative pest management strategies. In this seminar, I will discuss the challenges associated with insect vectors and vector-borne pathogens studied in our lab, certain molecular mechanisms driving insect vector-plant-virus interactions, and the development of an RNAi-based tool for their management.

Bio: Dr. Kiran Gadhave is an Assistant Professor of Entomology at Texas A&M AgriLife Research, Amarillo, and the Texas A&M Department of Entomology. A distinguished scholar with a global academic journey, he earned his master's degree in Entomology from Tamil Nadu Agricultural University in India as a Junior Research Fellow, a second master's in Plant Breeding and Genetics from Cornell University as a Tata Fellow, and a Ph.D. from the University of London as a College Overseas Scholar.

Dr. Gadhave leads an interdisciplinary research program at the nexus of insect vector biology, molecular biology, and plant virology. Since founding his lab just three years ago, he has secured over \$4.3 million in total competitive



funding, with support from leading federal agencies including FFAR, USDA, and NSF. His pioneering work has already garnered prestigious recognition: in 2023, he was one of only 11 scientists nationwide to receive the FFAR New Innovator in Food and Agriculture Research Award, and in 2022, he was inducted as a Fellow of the Royal Entomological Society.

With a prolific publication record and cutting-edge technologies in development, Dr. Gadhave is shaping the future of crop protection through innovation and impactful leadership.