

Efficacy of interdisciplinary research

The recent editorial by Balaram¹ on 'Interdisciplinary research: Silos and walls' discussed about research in biology and materials necessarily requiring an interdisciplinary approach if promised breakthroughs in the areas of medicine, agriculture and energy are to be realized in the future. Nowadays, especially in the field of agriculture, to understand complicated problems, multidisciplinary approach has become a necessity. At the Central Plantation Crops Research Institute (CPCRI), interdisciplinary projects were in vogue even in 1980s, whereas later on all institutes started adopting it. Two interdisciplinary research projects on coconut conducted at CPCRI are highlighted below.

In a research project, plant physiologists shifted from silos mode of isolated research¹ to interdisciplinary research and started understanding related aspects of biochemical processes with other parameters of drought conditions such as critical soil moisture level, weather parameters, genetic variability and agronomic traits related to yield. This holistic approach encouraged specialists from other disciplines to contribute to the understanding of soil factors associated with moisture stress on plants relating to its physiology and biochemical responses, genotypic variations, an agronomic traits correlating with various drought situations. Multi-author publications on

drought resistance in coconut revealed the merit of interdisciplinary research²⁻⁵.

Another interdisciplinary project, initiated in the early 1980s, was on 'high density multi-species cropping system', wherein the coconut/arecanut-supported system was studied. The interspaces of coconut/arecanut were examined in perennial, biennial and annual crops to enhance effective utilization of resources such as land, light, air, space and microclimate thus benefiting the farming community. The research involved expertise of scientists from various disciplines such as agronomy, plant breeding, soil science, microbiology, entomology, nematology and plant physiology. Also, the expertise of statisticians and agriculture economists was involved in this project for statistical design and economic analysis. The model was successfully implemented in many Indian states and even recognized in countries such as Sri Lanka, the Philippines, Indonesia and Vietnam.

Additionally, Balaram⁶ mentioned that research papers published in high-impact factor journals may not get cited, whereas those published in low-impact factor journals may get attention. The published paper⁷ on research work on coconut is an example of the same.

Sometimes in multidisciplinary research, public impact and benefit to farmers is more important than the impact

factor of publications. Irrespective of journal impact factor, farmers would only accept remunerative technology which is beneficial to them.

The Indian Council of Agricultural Research is now emphasizing more on interdisciplinary projects in all other institutes. The same approach is applicable to medical science where an interdisciplinary approach can help to overcome large challenges.

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Informative report on *Apis dorsata* F.

The correspondence by Abrol *et al.*¹ was interesting and informative. I have also seen *A. dorsata* in public urinals near Ropar (Punjab) probably feeding on human urine. I was bit perplexed at that time thinking that it might be attracted to sugar present in urine of diabetic persons. However, after reading this article, the picture has become clear. Not only have some Hemiptera, Heteroptera and some tropical butterflies (Lepidoptera) been recorded feeding on non-conventional and non-plant food sources, I

have also seen fruit flies (*Bactrocera* spp.) feeding on honey dew in the field and lizard excreta in the laboratory probably for carbohydrates and amino acids. Fletcher² reported feeding of adult fruit flies belonging to sub-family dacinae on honey dew and bird droppings in a review on 'Biology of Dacine fruit flies'.

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